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Sensations and Brain Processes .... *J. J. C. Smart* 141

On the Logic of Existence and Denotation *Nicholas Rescher* 157

Jonathan Edwards on Free Will and Moral Agency *Arthur E. Murphy* 181

Criticism in the History of Science: Newton on Absolute Space, Time, and Motion, II *Stephen Toulmin* 203

Linguistic Relativity: The Views of Benjamin Lee Whorf ..... *Max Black* 228

Nondesignating Singular Terms *Hugues Leblanc and Theodore Hailperin* 239

Reviews 244

Books Received 274

Note 280

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SENSATIONS AND BRAIN PROCESSES

SUPPOSE that I report that I have at this moment a roundish, blurry-edged after-image which is yellowish towards its edge and is orange towards its centre. What is it that I am reporting?[1] One answer to this question might be that I am not reporting anything, that when I say that it looks to me as though there is a roundish yellowy orange patch of light on the wall I am expressing some sort of *temptation*, the temptation to say that there *is* a roundish yellowy orange patch on the wall (though I may know that there is not such a patch on the wall). This is perhaps Wittgenstein's view in the *Philosophical Investigations* (see paragraphs 367, 370). Similarly, when I "report" a pain, I am not really reporting anything (or, if you like, I am reporting in a queer sense of "reporting"), but am doing a sophisticated sort of wince. (See paragraph 244: "The verbal expression of pain replaces crying and does not describe it." Nor does it describe anything else?)[2] I prefer most of the time to discuss an after-image rather than a pain, because the word "pain" brings in something which is irrelevant to my purpose: the notion of "distress." I think that "he is in pain" entails "he is in distress," that is, that he is in a certain agitation-condition.[3] Similarly, to say "I am in pain" may be to do more than "replace pain behavior": it may be partly to report something, though this

[1] This paper takes its departure from arguments to be found in U. T. Place's "Is Consciousness a Brain Process?" (*British Journal of Psychology*, XLVII, 1956, 44-50). I have had the benefit of discussing Place's thesis in a good many universities in the United States and Australia, and I hope that the present paper answers objections to his thesis which Place has not considered, and presents his thesis in a more nearly unobjectionable form. This paper is meant also to supplement "The 'Mental' and the 'Physical'," by H. Feigl (in *Minnesota Studies in the Philosophy of Science*, II, 370-497), which argues for much the same thesis as Place's.

[2] Some philosophers of my acquaintance, who have the advantage over me in having known Wittgenstein, would say that this interpretation of him is too behavioristic. However, it seems to me a very natural interpretation of his printed words, and whether or not it is Wittgenstein's real view it is certainly an interesting and important one. I wish to consider it here as a possible rival both to the "brain-process" thesis and to straight-out old-fashioned dualism.

[3] See Ryle, *Concept of Mind* (New York, 1949), p. 93.

something is quite nonmysterious, being an agitation-condition, and so susceptible of behavioristic analysis. The suggestion I wish if possible to avoid is a different one, namely that "I am in pain" is a genuine report, and that what it reports is an irreducibly psychical something. And similarly the suggestion I wish to resist is also that to say "I have a yellowish orange after-image" is to report something irreducibly psychical.

Why do I wish to resist this suggestion? Mainly because of Occam's razor. It seems to me that science is increasingly giving us a viewpoint whereby organisms are able to be seen as physico-chemical mechanisms:[4] it seems that even the behavior of man himself will one day be explicable in mechanistic terms. There does seem to be, so far as science is concerned, nothing in the world but increasingly complex arrangements of physical constituents. All except for one place: in consciousness. That is, for a full description of what is going on in a man you would have to mention not only the physical processes in his tissue, glands, nervous system, and so forth, but also his states of consciousness: his visual, auditory, and tactual sensations, his aches and pains. That these should be *correlated* with brain processes does not help, for to say that they are *correlated* is to say that they are something "over and above." You cannot correlate something with itself. You correlate footprints with burglars, but not Bill Sikes the burglar with Bill Sikes the burglar. So sensations, states of consciousness, do seem to be the one sort of thing left outside the physicalist picture, and for various reasons I just cannot believe that this can be so. That everything should be explicable in terms of physics (together of course with descriptions of the ways in which the parts are put together—roughly, biology is to physics as radio-engineering is to electro-magnetism) except the occurrence of sensations seems to me to be frankly unbelievable. Such sensations would be "nomological danglers," to use Feigl's expression.[5] It is not often realized how odd would be the laws

[4] On this point see Paul Oppenheim and Hilary Putnam, "Unity of Science as a Working Hypothesis," in *Minnesota Studies in the Philosophy of Science*, II, 3-36; also my note "Plausible Reasoning in Philosophy," *Mind*, LXVI (1957), 75-78.

[5] Feigl, *op. cit.*, p. 428.

whereby these nomological danglers would dangle. It is sometimes asked, "Why can't there be psycho-physical laws which are of a novel sort, just as the laws of electricity and magnetism were novelties from the standpoint of Newtonian mechanics?" Certainly we are pretty sure in the future to come across new ultimate laws of a novel type, but I expect them to relate simple constituents: for example, whatever ultimate particles are then in vogue. I cannot believe that ultimate laws of nature could relate simple constituents to configurations consisting of perhaps billions of neurons (and goodness knows how many billion billions of ultimate particles) all put together for all the world as though their main purpose in life was to be a negative feedback mechanism of a complicated sort. Such ultimate laws would be like nothing so far known in science. They have a queer "smell" to them. I am just unable to believe in the nomological danglers themselves, or in the laws whereby they would dangle. If any philosophical arguments seemed to compel us to believe in such things, I would suspect a catch in the argument. In any case it is the object of this paper to show that there are no philosophical arguments which compel us to be dualists.

The above is largely a confession of faith, but it explains why I find Wittgenstein's position (as I construe it) so congenial. For on this view there are, in a sense, no sensations. A man is a vast arrangement of physical particles, but there are not, over and above this, sensations or states of consciousness. There are just behavioral facts about this vast mechanism, such as that it expresses a temptation (behavior disposition) to say "there is a yellowish-red patch on the wall" or that it goes through a sophisticated sort of wince, that is, says "I am in pain." Admittedly Wittgenstein says that though the sensation "is not a something," it is nevertheless "not a nothing either" (paragraph 304), but this need only mean that the word "ache" has a use. An ache is a thing, but only in the innocuous sense in which the plain man, in the first paragraph of Frege's *Foundations of Arithmetic*, answers the question "what is the number one?" by "a thing." It should be noted that when I assert that to say "I have a yellowish-orange after-image" is to express a temptation to assert the physical-object statement "there is a yellowish-orange patch

on the wall," I mean that saying "I have a yellowish-orange after-image" is (partly) the exercise of the disposition[6] which is the temptation. It is not to *report* that I have the temptation, any more than is "I love you" normally a report that I love someone. Saying "I love you" is just part of the behavior which is the exercise of the disposition of loving someone.

Though, for the reasons given above, I am very receptive to the above "expressive" account of sensation statements, I do not feel that it will quite do the trick. Maybe this is because I have not thought it out sufficiently, but it does seem to me as though, when a person says "I have an after-image," he *is* making a genuine report, and that when he says "I have a pain," he *is* doing more than "replace pain-behavior," and that "this more" is not just to say that he is in distress. I am not so sure, however, that to admit this is to admit that there are nonphysical correlates of brain processes. Why should not sensations just be brain processes of a certain sort? There are, of course, well-known (as well as lesser-known) philosophical objections to the view that reports of sensations are reports of brain-processes, but I shall try to argue that these arguments are by no means as cogent as is commonly thought to be the case.

Let me first try to state more accurately the thesis that sensations are brain processes. It is not the thesis that, for example, "after-image" or "ache" means the same as "brain process of sort *X*" (where "*X*" is replaced by a description of a certain sort of brain process). It is that, in so far as "after-image" or "ache" is a report of a process, it is a report of a process that *happens to be* a brain process. It follows that the thesis does not claim that sensation statements can be *translated* into statements about brain processes.[7] Nor does it claim that the logic of a sensation statement is the same as that of a brain-process state-

[6] Wittgenstein did not like the word "disposition." I am using it to put in a nutshell (and perhaps inaccurately) the view which I am attributing to Wittgenstein. I should like to repeat that I do not wish to claim that my interpretation of Wittgenstein is correct. Some of those who knew him do not interpret him in this way. It is merely a view which I find myself extracting from his printed words and which I think is important and worth discussing for its own sake.

[7] See Place, *op. cit.*, p. 45, near top, and Feigl, *op. cit.*, p. 390, near top.

ment. All it claims is that in so far as a sensation statement is a report of something, that something is in fact a brain process. Sensations are nothing over and above brain processes. Nations are nothing "over and above" citizens, but this does not prevent the logic of nation statements being very different from the logic of citizen statements, nor does it insure the translatability of nation statements into citizen statements. (I do not, however, wish to assert that the relation of sensation statements to brain-process statements is very like that of nation statements to citizen statements. Nations do not just *happen to be* nothing over and above citizens, for example. I bring in the "nations" example merely to make a negative point: that the fact that the logic of A-statements is different from that of B-statements does not insure that A's are anything over and above B's.)

Remarks on identity. When I say that a sensation is a brain process or that lightning is an electric discharge, I am using "is" in the sense of strict identity. (Just as in the—in this case necessary—proposition "7 is identical with the smallest prime number greater than 5.") When I say that a sensation is a brain process or that lightning is an electric discharge I do not mean just that the sensation is somehow spatially or temporally continuous with the brain process or that the lightning is just spatially or temporally continuous with the discharge. When on the other hand I say that the successful general is the same person as the small boy who stole the apples I mean only that the successful general I see before me is a time slice[8] of the same four-dimensional object of which the small boy stealing apples is an earlier time slice. However, the four-dimensional object which has the general-I-see-before-me for its late time slice is identical in the strict sense with the four-dimensional object which has the small-boy-stealing-apples for an early time slice. I distinguish these two senses of "is identical with" because I wish to make it clear that the brain-process doctrine asserts identity in the *strict* sense.

I shall now discuss various possible objections to the view that

[8] See J. H. Woodger, *Theory Construction* (Chicago, 1939), p. 38 (International Encyclopedia of Unified Science, Vol. 2, No. 5). I here permit myself to speak loosely. For warnings against possible ways of going wrong with this sort of talk, see my note "Spatialising Time," *Mind*, LXIV (1955), 239-41.

the processes reported in sensation statements are in fact processes in the brain. Most of us have met some of these objections in our first year as philosophy students. All the more reason to take a good look at them. Others of the objections will be more recondite and subtle.

Objection 1. Any illiterate peasant can talk perfectly well about his after-images, or how things look or feel to him, or about his aches and pains, and yet he may know nothing whatever about neurophysiology. A man may, like Aristotle, believe that the brain is an organ for cooling the body without any impairment of his ability to make true statements about his sensations. Hence the things we are talking about when we describe our sensations cannot be processes in the brain.

Reply. You might as well say that a nation of slug-abeds, who never saw the morning star or knew of its existence, or who had never thought of the expression "the Morning Star," but who used the expression "the Evening Star" perfectly well, could not use this expression to refer to the same entity as we refer to (and describe as) "the Morning Star."[9]

You may object that the Morning Star is in a sense not the very same thing as the Evening Star, but only something spatio-temporally continuous with it. That is, you may say that the Morning Star is not the Evening Star in the strict sense of "identity" that I distinguished earlier. I can perhaps forestall this objection by considering the slug-abeds to be New Zealanders and the early risers to be Englishmen. Then the thing the New Zealanders describe as "the Morning Star" could be the very same thing (in the strict sense) as the Englishmen describe as "the Evening Star." And yet they could be ignorant of this fact.

There is, however, a more plausible example. Consider lightning.[10] Modern physical science tells us that lightning is a certain kind of electrical discharge due to ionization of clouds of water-vapor in the atmosphere. This, it is now believed, is what the true nature of lightning is. Note that there are not two things: a flash of lightning and an electrical discharge. There is one thing, a flash of lightning, which is described scientifically

[9] Cf. Feigl, *op. cit.*, p. 439.

[10] See Place, *op. cit.*, p. 47; also Feigl, *op. cit.*, p. 438.

as an electrical discharge to the earth from a cloud of ionized water-molecules. The case is not at all like that of explaining a footprint by reference to a burglar. We say that what lightning really is, what its true nature as revealed by science is, is an electric discharge. (It is not the true nature of a footprint to be a burglar.)

To forestall irrelevant objections, I should like to make it clear that by "lightning" I mean the publicly observable physical object, lightning, not a visual sense-datum of lightning. I say that the publicly observable physical object lightning is in fact the electric discharge, not just a correlate of it. The sense-datum, or at least the having of the sense-datum, the "look" of lightning, may well in my view be a correlate of the electric discharge. For in my view it is a brain state *caused* by the lightning. But we should no more confuse sensations of lightning with lightning than we confuse sensations of a table with the table.

In short, the reply to Objection 1 is that there can be contingent statements of the form "A is identical with B," and a person may well know that something is an A without knowing that it is a B. An illiterate peasant might well be able to talk about his sensations without knowing about his brain processes, just as he can talk about lightning though he knows nothing of electricity.

Objection 2. It is only a contingent fact (if it is a fact) that when we have a certain kind of sensation there is a certain kind of process in our brain. Indeed it is possible, though perhaps in the highest degree unlikely, that our present physiological theories will be as out of date as the ancient theory connecting mental processes with goings on in the heart. It follows that when we report a sensation we are not reporting a brain-process.

Reply. The objection certainly proves that when we say "I have an after-image" we cannot *mean* something of the form "I have such and such a brain-process." But this does not show that what we report (having an after-image) is not *in fact* a brain process. "I see lightning" does not *mean* "I see an electric discharge." Indeed, it is logically possible (though highly unlikely) that the electrical discharge account of lightning might one day be given up. Again, "I see the Evening Star" does not *mean* the same as "I see the Morning Star," and yet "the Evening Star and the Morning Star are one and the same thing" is a contingent

proposition. Possibly Objection 2 derives some of its apparent strength from a "Fido"—Fido theory of meaning. If the meaning of an expression were what the expression named, then of course it *would* follow from the fact that "sensation" and "brain-process" have different meanings that they cannot name one and the same thing.

Objection 3.[11] Even if Objections 1 and 2 do not prove that sensations are something over and above brain-processes, they do prove that the qualities of sensations are something over and above the qualities of brain-processes. That is, it may be possible to get out of asserting the existence of irreducibly psychic processes, but not out of asserting the existence of irreducibly psychic *properties*. For suppose we identify the Morning Star with the Evening Star. Then there must be some properties which logically imply that of being the Morning Star, and quite distinct properties which entail that of being the Evening Star. Again, there must be some properties (for example, that of being a yellow flash) which are logically distinct from those in the physicalist story.

Indeed, it might be thought that the objection succeeds at one jump. For consider the property of "being a yellow flash." It might seem that this property lies inevitably outside the physicalist framework within which I am trying to work (either by "yellow" being an objective emergent property of physical objects, or else by being a power to produce yellow sense-data, where "yellow," in this second instantiation of the word, refers to a purely phenomenal or introspectible quality). I must therefore digress for a moment and indicate how I deal with secondary qualities. I shall concentrate on color.

First of all, let me introduce the concept of a normal percipient. One person is more a normal percipient than another if he can make color discriminations that the other cannot. For example, if A can pick a lettuce leaf out of a heap of cabbage leaves, whereas B cannot though he can pick a lettuce leaf out of a heap of beetroot leaves, then A is more normal than B. (I am assuming that A and B are not given time to distinguish the

[11] I think this objection was first put to me by Professor Max Black. I think it is the most subtle of any of those I have considered, and the one which I am least confident of having satisfactorily met.

leaves by their slight difference in shape, and so forth.) From the concept of "more normal than" it is easy to see how we can introduce the concept of "normal." Of course, Eskimos may make the finest discriminations at the blue end of the spectrum, Hottentots at the red end. In this case the concept of a normal percipient is a slightly idealized one, rather like that of "the mean sun" in astronomical chronology. There is no need to go into such subtleties now. I say that "This is red" means something roughly like "A normal percipient would not easily pick this out of a clump of geranium petals though he would pick it out of a clump of lettuce leaves." Of course it does not exactly mean this: a person might know the meaning of "red" without knowing anything about geraniums, or even about normal percipients. But the point is that a person can be *trained* to say "This is red" of objects which would not easily be picked out of geranium petals by a normal percipient, and so on. (Note that even a color-blind person can reasonably assert that something is red, though of course he needs to use another human being, not just himself, as his "color meter.") This account of secondary qualities explains their unimportance in physics. For obviously the discriminations and lack of discriminations made by a very complex neurophysiological mechanism are hardly likely to correspond to simple and nonarbitrary distinctions in nature.

I therefore elucidate colors as powers, in Locke's sense, to evoke certain sorts of discriminatory responses in human beings. They are also, of course, powers to cause sensations in human beings (an account still nearer Locke's). But these sensations, I am arguing, are identifiable with brain processes.

Now how do I get over the objection that a sensation can be identified with a brain process only if it has some phenomenal property, not possessed by brain processes, whereby one-half of the identification may be, so to speak, pinned down?

My suggestion is as follows. When a person says, "I see a yellowish-orange after-image," he is saying something like this: "*There is something going on which is like what is going on when* I have my eyes open, am awake, and there is an orange illuminated in good light in front of me, that is, when I really see an orange." (And there is no reason why a person should not say the same

thing when he is having a veridical sense-datum, so long as we construe "like" in the last sentence in such a sense that something can be like itself.) Notice that the italicized words, namely "there is something going on which is like what is going on when," are all quasi-logical or topic-neutral words. This explains why the ancient Greek peasant's reports about his sensations can be neutral between dualistic metaphysics or my materialistic metaphysics. It explains how sensations can be brain-processes and yet how those who report them need know nothing about brain-processes. For he reports them only very abstractly as "something going on which is like what is going on when . . ." Similarly, a person may say "someone is in the room," thus reporting truly that the doctor is in the room, even though he has never heard of doctors. (There are not two people in the room: "someone" *and* the doctor.) This account of sensation statements also explains the singular elusiveness of "raw feels"—why no one seems to be able to pin any properties on them.[12] Raw feels, in my view, are colorless for the very same reason that *something* is colorless. This does not mean that sensations do not have properties, for if they are brain-processes they certainly have properties. It only means that in speaking of them as being like or unlike one another we need not know or mention these properties.

This, then, is how I would reply to Objection 3. The strength of my reply depends on the possibility of our being able to report that one thing is like another without being able to state the respect in which it is like. I am not sure whether this is so or not, and that is why I regard Objection 3 as the strongest with which I have to deal.

Objection 4. The after-image is not in physical space. The brain-process is. So the after-image is not a brain-process.

Reply. This is an *ignoratio elenchi.* I am not arguing that the after-image is a brain-process, but that the experience of having an after-image is a brain-process. It is the *experience* which is reported in the introspective report. Similarly, if it is objected that the after-image is yellowy-orange but that a surgeon looking into your brain would see nothing yellowy-orange, my reply is

[12] See B. A. Farrell, "Experience," *Mind,* LIX (1950), especially 174.

that it is the experience of seeing yellowy-orange that is being described, and this experience is not a yellowy-orange something. So to say that a brain-process cannot be yellowy-orange is not to say that a brain-process cannot in fact be the experience of having a yellowy-orange after-image. There is, in a sense, no such thing as an after-image or a sense-datum, though there is such a thing as the experience of having an image, and this experience is described indirectly in material object language, not in phenomenal language, for there is no such thing.[13] We describe the experience by saying, in effect, that it is like the experience we have when, for example, we really see a yellowy-orange patch on the wall. Trees and wallpaper can be green, but not the experience of seeing or imagining a tree or wallpaper. (Or if they are described as green or yellow this can only be in a derived sense.)

Objection 5. It would make sense to say of a molecular movement in the brain that it is swift or slow, straight or circular, but it makes no sense to say this of the experience of seeing something yellow.

Reply. So far we have not given sense to talk of experiences as swift or slow, straight or circular. But I am not claiming that "experience" and "brain-process" mean the same or even that they have the same logic. "Somebody" and "the doctor" do not have the same logic, but this does not lead us to suppose that talking about somebody telephoning is talking about someone over and above, say, the doctor. The ordinary man when he reports an experience is reporting that something is going on, but he leaves it open as to what sort of thing is going on, whether in a material solid medium, or perhaps in some sort of gaseous medium, or even perhaps in some sort of nonspatial medium (if this makes sense). All that I am saying is that "experience" and "brain-process" may in fact refer to the same thing, and

[13] Dr. J. R. Smythies claims that a sense-datum language could be taught independently of the material object language ("A Note on the Fallacy of the 'Phenomenological Fallacy,' " *British Journal of Psychology*, XLVIII, 1957, 141-144.) I am not so sure of this: there must be some public criteria for a person having got a rule wrong before we can teach him the rule. I suppose someone might *accidentally* learn color words by Dr. Smythies' procedure. I am not, of course, denying that we can learn a sense-datum language in the sense that we can learn to report our experience. Nor would Place deny it.

if so we may easily adopt a convention (which is not a change in our present rules for the use of experience words but an addition to them) whereby it would make sense to talk of an experience in terms appropriate to physical processes.

Objection 6. Sensations are private, brain processes are *public.* If I sincerely say, "I see a yellowish-orange after-image" and I am not making a verbal mistake, then I cannot be wrong. But I can be wrong about a brain-process. The scientist looking into my brain might be having an illusion. Moreover, it makes sense to say that two or more people are observing the same brain-process but not that two or more people are reporting the same inner experience.

Reply. This shows that the language of introspective reports has a different logic from the language of material processes. It is obvious that until the brain-process theory is much improved and widely accepted there will be no *criteria* for saying "Smith has an experience of such-and-such a sort" *except* Smith's introspective reports. So we have adopted a rule of language that (normally) what Smith says goes.

Objection 7. I can imagine myself turned to stone and yet having images, aches, pains, and so on.

Reply. I can imagine that the electrical theory of lightning is false, that lightning is some sort of purely optical phenomenon. I can imagine that lightning is not an electrical discharge. I can imagine that the Evening Star is not the Morning Star. But it is. All the objection shows is that "experience" and "brain-process" do not have the same meaning. It does not show that an experience is not in fact a brain process.

This objection is perhaps much the same as one which can be summed up by the slogan: "What can be composed of nothing cannot be composed of anything."[14] The argument goes as follows: on the brain-process thesis the identity between the brain-process and the experience is a contingent one. So it is logically possible that there should be no brain-process, and no process of any other sort, either (no heart process, no kidney process, no liver process). There would be the experience but no

[14] I owe this objection to Mr. C. B. Martin. I gather that he no longer wishes to maintain this objection, at any rate in its present form.

"corresponding" physiological process with which we might be able to identify it empirically.

I suspect that the objector is thinking of the experience as a ghostly entity. So it is composed of something, not of nothing, after all. On his view it is composed of ghost stuff, and on mine it is composed of brain stuff. Perhaps the counter-reply will be[15] that the experience is simple and uncompounded, and so it is not composed of anything after all. This seems to be a quibble, for, if it were taken seriously, the remark "What can be composed of nothing cannot be composed of anything" could be recast as an a priori argument against Democritus and atomism and for Descartes and infinite divisibility. And it seems odd that a question of this sort could be settled a priori. We must therefore construe the word "composed" in a very weak sense, which would allow us to say that even an indivisible atom is composed of something (namely, itself). The dualist cannot really say that an experience can be composed of nothing. For he holds that experiences are something over and above material processes, that is, that they are a sort of ghost stuff. (Or perhaps ripples in an underlying ghost stuff.) I say that the dualist's hypothesis is a perfectly intelligible one. But I say that experiences are not to be identified with ghost stuff but with brain stuff. This is another hypothesis, and in my view a very plausible one. The present argument cannot knock it down a priori.

Objection 8. The "beetle in the box" objection (see Wittgenstein, *Philosophical Investigations*, paragraph 293). How could descriptions of experiences, if these are genuine reports, get a foothold in language? For any rule of language must have public criteria for its correct application.

Reply. The change from describing how things are to describing how we feel is just a change from uninhibitedly saying "this is so" to saying "this looks so." That is, when the naive person might be tempted to say, "There is a patch of light on the wall which moves whenever I move my eyes" or "A pin is being stuck into me," we have learned how to resist this temptation and say "It *looks as though* there is a patch of light on the wallpaper" or

[15] Martin did not make this reply, but one of his students did.

"It *feels as though* someone were sticking a pin into me." The introspective account tells us about the individual's state of consciousness in the same way as does "I see a patch of light" or "I feel a pin being stuck into me": it differs from the corresponding perception statement in so far as (a) in the perception statement the individual "goes beyond the evidence of his senses" in describing his environment and (b) in the introspective report he withholds descriptive epithets he is inclined to ascribe to the environment, perhaps because he suspects that they may not be appropriate to the actual state of affairs. Psychologically speaking, the change from talking about the environment to talking about one's state of consciousness is simply a matter of inhibiting descriptive reactions not justified by appearances alone, and of disinhibiting descriptive reactions which are normally inhibited because the individual has learned that they are unlikely to provide a reliable guide to the state of the environment in the prevailing circumstances.[16] To say that something looks green to me is to say that my experience is like the experience I get when I see something that really is green. In my reply to Objection 3, I pointed out the extreme openness or generality of statements which report experiences. This explains why there is no language of private qualities. (Just as "someone," unlike "the doctor," is a colorless word.)[17]

If it is asked what is the difference between those brain processes which, in my view, are experiences and those brain processes which are not, I can only reply that this is at present unknown. But it does not seem to me altogether fanciful to conjecture that the difference may in part be that between perception and reception (in Dr. D. M. MacKay's terminology) and that the type of brain process which is an experience might be identifiable with MacKay's active "matching response."[18]

[16] I owe this point to Place, in correspondence.

[17] The "beetle in the box" objection is, *if it is sound*, an objection to *any* view, and in particular the Cartesian one, that introspective reports are genuine reports. So it is no objection to a weaker thesis that I would be concerned to uphold, namely, that if introspective reports of "experiences" are genuinely reports, then the things they are reports of are in fact brain processes.

[18] See his article "Towards an Information-Flow model of Human Behaviour," *British Journal of Psychology*, XLVII (1956), 30-43.

I have now considered a number of objections to the brain-process thesis. I wish now to conclude by some remarks on the logical status of the thesis itself. U. T. Place seems to hold that it is a straight-out scientific hypothesis.[19] If so, he is partly right and partly wrong. If the issue is between (say) a brain-process thesis and a heart thesis, or a liver thesis, or a kidney thesis, then the issue is a purely empirical one, and the verdict is overwhelmingly in favor of the brain. The right sorts of things don't go on in the heart, liver, or kidney, nor do these organs possess the right sort of complexity of structure. On the other hand, if the issue is between a brain-or-heart-or-liver-or-kidney thesis (that is, some form of materialism) on the one hand and epiphenomenalism on the other hand, then the issue is not an empirical one. For there is no conceivable experiment which could decide between materialism and epiphenomenalism. This latter issue is not like the average straight-out empirical issue in science, but like the issue between the nineteenth-century English naturalist Philip Gosse[20] and the orthodox geologists and paleontologists of his day. According to Gosse, the earth was created about 4000 B.C. exactly as described in *Genesis*, with twisted rock strata, "evidence" of erosion, and so forth, and all sorts of fossils, all in their appropriate strata, just as if the usual evolutionist story had been true. Clearly this theory is in a sense irrefutable: no evidence can possibly tell against it. Let us ignore the theological setting in which Philip Gosse's hypothesis had been placed, thus ruling out objections of a theological kind, such as "what a queer God who would go to such elaborate lengths to deceive us." Let us suppose that it is held that the universe just *began* in 4004 B.C. with the initial conditions just everywhere as they were in 4004 B.C., and in particular that our own planet began with sediment in the rivers, eroded cliffs, fossils in the rocks, and so on. No scientist would ever entertain this as a serious hypothesis, consistent though it is with all possible evidence. The hypothesis offends against the principles of parsimony and simplicity. There would be far too many brute and inexplicable facts. Why are

[19] *Op. cit.*

[20] See the entertaining account of Gosse's book *Omphalos* by Martin Gardner in *Fads and Fallacies in the Name of Science* (2nd ed., New York, 1957).

pterodactyl bones just as they are? No explanation in terms of the evolution of pterodactyls from earlier forms of life would any longer be possible. We would have millions of facts about the world as it was in 4004 B.C. that just have to be *accepted.*

The issue between the brain-process theory and epiphenomenalism seems to be of the above sort. (Assuming that a behavioristic reduction of introspective reports is not possible.) If it be agreed that there are no cogent philosophical arguments which force us into accepting dualism, and if the brain process theory and dualism are equally consistent with the facts, then the principles of parsimony and simplicity seem to me to decide overwhelmingly in favor of the brain-process theory. As I pointed out earlier, dualism involves a large number of irreducible psychophysical laws (whereby the "nomological danglers" dangle) of a queer sort, that just have to be taken on trust, and are just as difficult to swallow as the irreducible facts about the paleontology of the earth with which we are faced on Philip Gosse's theory.

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ON THE LOGIC OF EXISTENCE AND DENOTATION

I

IN RECENT philosophical discussion regarding the nature of the concept of existence and the logical theory of cognate concepts, the tendency has been to view these problems in their Kantian setting, by focussing upon the question "Is 'exists' a predicate?" and the bearing which these considerations have upon the validity of the ontological argument.[1] Now it is, to be sure, inevitable that the logical theory of *existence* must in the last analysis rest upon *ontological* and not purely logical considerations. As Russell has said, "Pure logic has no occasion for names, since its propositions contain only variables. However, the logician may wonder in his unprofessional moments, what constants could be substituted for his variables."[2] But it is clearly anomalous to hinge the entire theory of existence primarily or largely upon *only one* of its ontological implications. And this is especially inadmissable when it happens to be what is, after all, the most remote, abstruse, and metaphysical of the problems here involved. Furthermore, a denial that "exists" is a predicate, if stemming solely from repugnance to the ontological argument and desire for its overthrow, would be highly captious, and would be as wholly indefensible as any other purely *ad hoc* determination made solely for the purpose of evading an unwanted consequence. It is necessary to find other reasons, wholly independent of the ontological argument, upon which a denial that "exists" is a predicate can reasonably be based. However crucial the question whether "exists" is or is not a predicate may be for the validity of the ontological proof, there is surely no justifiable course but to

[1] See, for example, the following: H. S. Leonard, "The Logic of Existence," *Philosophical Studies*, VII (1956), pp. 49-64 (especially pp. 57-58); G. Nakhnikian and W. C. Salmon, " 'Exists' as a Predicate," *Philosophical Review*, LXVI (1957), pp. 535-542.

[2] *Human Knowledge* (New York, 1948), p. 74.

base this decision, in the final analysis, upon other grounds. Pivoting the logical theory of existence about the ontological argument is to put the cart before the horse; they go together, it is true, but not in *that* order.

The purpose of the present paper is to revert to a more judicious mode of treatment. I propose here to examine the logic of existence concepts, proceeding insofar as possible in total abstraction from the ontological argument. Intrinsic merits aside, this approach will, I think, prove fruitful in terms of deepened insight into fundamental aspects of the logical theory of existence and of denotation.

II

The notation "E*a*" will here serve to represent the statement "*a* exists." This notation is not intended to prejudice—and surely cannot appropriately be interpreted as prejudicing—the question "Is 'exists' a predicate?".[3] Clearly, the proposed abbreviation is wholly incapable of bearing upon this question, which after all does not relate to such purely superficial considerations of notation or typography, but deals with the fundamental logical and conceptual issues that are here at stake. No one who has denied that existence is a predicate is, or to my knowledge has been, of a mind to pivot this thesis about the question of whether existential statements can be abbreviated.

The notation "E*a*" exemplifies (but does not exhaust) the possibility of attributions—in this case of "existence"—that are not necessarily predications. The justification of this distinction is the wish to keep open the possibility of a theory of predication that calls for predicates to have characteristics not possessed by attributes in general, that is, by all attributes. There is no a priori reason for constraining ourselves to having to say about every attribution whatsoever those things which we want to say about predications. For this is not a matter which can be settled adequately and defensibly in advance of a study of the logic of

[3] Sometimes this question is somewhat naively taken as settled affirmatively by the possibility of such a notation. Both of the papers cited in footnote 1 appear to provide instances of this.

predication. It is thus potentially useful, and for our purposes necessary, to adopt some such terminology as that of employing the (generic) term *attribute* in application to the broad genus of attributions in general, and to reserve the term *predicate* for the species of property-denoting terms.

This distinction between the genus *attribute* and its species *predicate* must at once be carried over into the theory of abstraction. If A is some attribute or other, we must not now regard its intensional abstract $(\lambda a)(Aa)$ as a property, but rather as again merely an attribute. Abstraction (namely, intensional abstraction) does not automatically yield properties; only the intensional abstract of a *predicate* is a property.

Thus a second-order functional calculus that can serve as a fruitful framework of reference for a discussion of whether "exists" is or is not a predicate will have to provide two kinds of first-order functional variables, those which stand generally for "mere" attributes (i.e., the genus, including the species predicate), and the predicate-variables proper. Here the Greek capitals "Φ," "Ψ," . . ., will be used as attribute-variables, and the Greek lower-case letters "φ," "ψ," . . ., will serve as predicate-variables. The fact that every predicate is an attribute can now be represented as:

(1) $(\varphi)\ (\exists\Phi)\ (\varphi = \Phi)$.

The *denial* of the proposition that every attribute is a property appears as

(2) $\sim (\Phi)\ (\exists\varphi)\ (\varphi = \Phi)$.

or, equivalently,

(3) $(\exists\Phi)\ (\varphi)\ (\varphi \neq \Phi)$.

Again, it will now be a general truth for any sentential function ". . ." of one variable (say x) that,

(4) $(\exists\Phi)\ (\Phi = (\lambda x)\ \ldots)$.

However, the counterpart of (4) with a predicate variable "φ" in place of the attribute variable "Φ," that is,

(5) $(\exists\varphi)\ (\varphi = (\lambda x)\ \ldots)$,

will not be true in general, but only under some condition on the

sentential function ". . ." which assures that its intensional abstract is a predicate.[4]

What criterion is to be used in discriminating between attributes which are not predicates and those which are? Until this question has been answered, the problem of the status of existence as a predicate cannot meaningfully be raised, let alone solved. For this purpose the following, very obvious, negative (and therefore perhaps incomplete) criterion may well prove sufficient:

The attribute Φ_1 will *not* be a property, and so its name will *not* be a predicate, if there exists (in the logical system under discussion) a sentential expression of the form ". . . Φ_1 . . ." such that either: (1) ". . . Φ_1 . . ." does *not* entail (logically imply) "$(\exists\varphi)$ (. . . φ . . .)", or (2) "(φ) (. . . φ . . .)" does *not* entail ". . . Φ_1 . . .".

The appropriateness of this criterion is at once obvious. For the existence of an expression of the sort mentioned would show that the attribute Φ_1 does not fall within the range of the predicate-variables of the system, that is, that Φ_1 is not a predicate.[5] Only some such criterion can serve as foundation for a fruitful discussion of whether the *attribute* E is or is not a *predicate*.

III

I propose now to adduce reasons for rejecting the statement that all things exist—or, more pointedly, for excluding its formal coun-

[4] The dualism of sets and classes in the set-theory of von Neumann is analogous with this predicate versus attribute distinction: every set is a class, but only under special conditions are classes sets. J. von Neumann, "Ueber eine Wiederspruchsfreiheitsfrage in der axiomatischen Mengenlehre," *Journal für reine und angewandte Mathematik*, CLX (1929), pp. 227-241. Improved formulations of this system are due to P. Bernays and K. Gödel. P. Bernays, "A System of Axiomatic Set Theory," *The Journal of Symbolic Logic*, II (1937), pp. 65-77; K. Gödel, *The Consistency of the Continuum Hypothesis* (Princeton, 1940).

[5] In making the property versus attribute distinction dependent upon the concept of deductibility this criterion relativizes the distinction to the deductive strength of the logical system under consideration. This makes for an element of conventionalism that may at first view appear undesirable. Against this critique it must be urged that this consequence is not unacceptable because while certain "conventional" consequences do ensue upon the choice of a particular system, this choice itself is not arbitrary, being conditioned by our informal (unsystematic or, better, pre-systematic) understanding of the purposes the chosen system is intended to serve.

terpart "$(x)\mathrm{E}x$" from among the asserted propositions of such logical systems as are to be viewed as capable of providing a suitable framework of reference for the analysis of existence-concepts. Two fundamental factors necessitate this rejection, the one stemming from modal logic, the other deriving from the theory of counterfactual statements.

It cannot reasonably be gainsaid that there are true statements to the effect that certain things are possible, though not in fact actual or extant. An example of a statement of this kind is the statement that, while unicorns do not exist, it is perfectly possible that they might. There are surely true statements which say that certain possible states of affairs might have obtained, or things might possibly have been, though these are not in fact realized or actual. Indeed to maintain the actuality of all alternative possibilities is logically untenable in view of the fact that these will mutually exclude one another. For reasons such as these one wants to deny the proposition:

(1) $(x)\ (\Diamond\ \mathrm{E}x \supset \mathrm{E}x)$.

But to deny (1), we must assent to the assertion

(2) $\sim (x)\ (\Diamond\ \mathrm{E}x \supset \mathrm{E}x)$.

But this is equivalent with

(3) $(\exists x)\ (\Diamond\ \mathrm{E}x\ \&\ \sim \mathrm{E}x)$,

which entails

(4) $(\exists x) \sim \mathrm{E}x$.

Now (4) contradicts

(5) $(x)\mathrm{E}x$.

We are thus forced to choose between (2) and (5). Now there is—to my mind—simply no gainsaying the fact that an adequate logic of modality requires acceptance of (2); and there is thus no recourse but to reject (5). Engendering as it does the rejection of (2), (5) forces upon us—and this in the crucial case of the attribute E—the unsavory doctrine of *a posse ad esse valet consequentia*, a precept quite properly viewed with suspicion by logicians even in medieval times.

My second objection to acceptance of "$(x)\mathrm{E}x$" is based upon the consideration that there are true but counterfactual existential statements. The following is surely an instance of this kind: "If

Hamlet had actually existed, he could not have been a more complex personality than the protagonist of Shakespeare's play." Now the analysis of counterfactual statements is a complex and difficult matter into whose technical intricacies I have no desire to enter now.[6] But fortunately the sole feature of these statements required for my present purpose is virtually the only point on which general agreement among all the diverse accounts obtains. If a counterfactual statement of the form "If P were to have been realized, then Q would also have been realized" is true, this requires that the statement P involved in the protasis or antecedent of the counterfactual statement must be false. But consider now any counterfactual statement with an existential protasis, such as that given above. Such a statement S has an antecedent of the form "$\mathrm{E}x_1$". By the very nature of counterfactuals, we therefore at once have:

(6) $S \supset \sim \mathrm{E}x_1$.

Now this entails:

(7) $\mathrm{E}x_1 \supset \sim S$.

Since, in general, we have

(8) $(x)\mathrm{E}x \supset \mathrm{E}x_1$,[7]

it follows at once that:

(9) $(x)\mathrm{E}x \supset \sim S$.

Thus the assertion of $(x)\mathrm{E}x$ precludes *ab initio* the truth of any counterfactual existential statement whatsoever. Since this consequence cannot be regarded as acceptable, we have here yet another line of argument in support of the rejection of $(x)\mathrm{E}x$.

IV

The rejection of $(x)\mathrm{E}x$ entails rejection of a variety of proposed definitions of "E" which have been discussed in the recent

[6] The pioneer studies are: R. Chisholm, "The Contrary-to-Fact Conditional," *Mind*, LV (1946), pp. 289-307; and N. Goodman, "The Problem of Counterfactual Conditionals," *The Journal of Philosophy*, XLIV (1947), 113-128. A particularly helpful survey of the extended literature is: E.F. Schneider, "Recent Discussion of Subjunctive Conditionals," *The Review of Metaphysics*, VI (1952), 623-647.

[7] This presupposes a system of logic such that nonexistent individuals—such as Hamlet—lie within the range of the individual variables "x", "y", etc.

literature. For example, it has been proposed that "E" be characterized by the definition:

(E1) $\mathrm{E} \underset{\mathrm{DF}}{=} (\lambda x)\ (x = x)$.[8]

But in view of the inevitability of the assertion $(x)\ (x = x)$ in any system of quantificational logic, (E1) has as its immediate consequence that $(x)\mathrm{E}x$. (E1) is therefore open to the line of objection developed in Section III.

Again, a prima facie plausible definition of "E" is the following:

(E2) $\mathrm{E} \underset{\mathrm{DF}}{=} (\lambda x)\ (\exists y)\ (y = x)$.

But here again the definition founders on the fact that in the standard systems of quantification logic (for non-empty domains) it is a theorem that $(x)\ (\exists y)\ (y{=}x)$. And thus (E2) also has the unwanted consequence $(x)\mathrm{E}x$.

The rejection of (E2) does *not*, it should be noted, of itself amount to a rejection of Quine's well-known thesis, "To be is to be the value of a variable."[9] For if this thesis is interpreted conservatively as stating

(Q) $\mathrm{E}x \rightarrow (\exists y)\ (y = x)$,

then it does not entail $(x)\mathrm{E}x$. However, the *converse* of (Q), namely,

(Q') $(\exists y)\ (y = x) \rightarrow \mathrm{E}x$,

which Quine apparently also intends, *does*, as we saw in the foregoing argument concerning (E2), lead to $(x)\mathrm{E}x$, and must be rejected on that ground. The reader to whom the rejection of (Q') appears as a paradox must abate his impatience until Section IX below, in which a rationale for this rejection is developed.

I have myself elsewhere proposed to define "E" by the definition:

(E3) $\mathrm{E} \underset{\mathrm{DF}}{=} (\lambda x)\ [(\exists \varphi)\ (\sim \varphi x\ \&\ \Diamond(\exists y)\varphi y)]$.[10]

According to this definition, the individual x "exists" if there is some property which fails to characterize x, but which *could* be

[8] G. Nakhnikian and W.C. Salmon, " 'Exists' as a Predicate," *Philosophical Review*, LXVI (1957), 535-542 (see p. 539).

[9] W. V. Quine, "Designation and Existence," *The Journal of Philosophy*, XXXVI (1939), 701-709 (see especially pp. 707-708). This article is reprinted in H. Feigl and W. Sellars, *Readings in Philosophical Analysis* (New York, 1949).

[10] "Definition of 'Existence,' " *Philosophical Studies*, VII (1957), 65-69 (see pp. 67-69).

instantiated. (Note that (E3) could be formulated as $(\lambda x)\,[(\exists \varphi)\,(\varphi x \,\&\, \Diamond\,(\exists y) \sim \varphi y)]$, i.e., as stating that x exists if it has a *non-trivial* property, one which need not characterize all individuals whatsoever.) Let us examine the proposition $\sim (x)\mathrm{E}x$, with "E" taken in the sense of (E3). This is equivalent with:

(1) $(\exists x)\,(\varphi)\,[\Diamond(\exists y)\varphi y \supset \varphi x]$.

Now we cannot, in any adequate theory of modality, avoid assent to the proposition: $(\exists \varphi)\,[\Diamond(\exists y)\varphi y \,\&\, \Diamond(\exists y) \sim \varphi y]$. But this, together with (1), leads to

(2) $(\exists x)\,(\exists \varphi)\,(\varphi x \,\&\, \sim \varphi x)$,

which is absurd (i.e., self-contradictory). Thus (E3) leads to the consequence $(x)\mathrm{E}x$, a result which renders this definition itself unacceptable.

A definition of "E" recently proposed by H. S. Leonard is, essentially, as follows:

(E4) $\mathrm{E} \underset{\mathrm{DF}}{=} (\lambda x)\,[(\exists \varphi)\,(\varphi x \,\&\, \Diamond \sim \varphi x)]$.[11]

On this definition, x "exists" only if it has a *contingent* property, that is, a property which it has, but not necessarily. Consider now the statement "$(\exists x) \sim \mathrm{E}x$," with "E" taken in the sense of (E4), that is,

(3) $(\exists x) \sim (\exists \varphi)\,(\varphi x \,\&\, \Diamond \sim \varphi x)$.

This is equivalent with

(4) $(\exists x)\,(\varphi)\,(\varphi x \supset \Box \varphi x)$.

Now (4) amounts to the assertion that there are objects which necessarily have each of the properties they do in fact have. This is wholly acceptable, and indeed is quite true of abstract mathematical objects.[12] Thus (E4) passes muster from the standpoint of avoiding the consequence $(x)\mathrm{E}x$.

But while (E4) appears as acceptable from this standpoint, it has one unfortunate consequence which necessitates its rejection also.[13] For it is at least an arguable thesis that abstract mathe-

[11] "The Logic of Existence," *Philosophical Studies*, VII (1957), 49-64 (see especially p. 58).

[12] Indeed just this is the thesis upon which rests the objection to (E4) shortly to be developed.

[13] This objection to (E4) was raised in my paper on "Definitions of Existence," *Philosophical Studies*, VII (1957), 65-68 (see p. 67). This motivated my proposed (and here rejected) definition (E3).

matical objects, such as numbers and sets, exist. But such objects necessarily have each of those properties which they do have. All of the properties of the number 3, such for example as being half of 6, are necessary (demonstrable).[14] For such an abstract object X we have:

(5) $(\varphi)\ (\varphi X \supset \Box \varphi X)$.

This is equivalent to

(6) $\sim (\exists \varphi)\ (\varphi X\ \&\ \Diamond \sim \varphi X)$,

which is equivalent to "$\sim$ EX," when "E" is taken in the sense of (E4). Thus (E4) in effect denies a priori and without further ado or qualification that abstract mathematical objects exist. This, I submit, warrants its rejection.

V

To make a fresh start upon this vexing question of the definition of "E," let us consider first of all the thesis that if a thing does not exist, then its only *qualitative* properties[15] are those which characterize all objects. A symbolic transcription of this thesis is

(T) $\sim \mathrm{E}x \supset_x (P)\ [Px \supset (y)Py]$.

The limitation of (T) to qualitative properties derives from the consideration that its general counterpart

($T.1$) $\sim \mathrm{E}x \supset_x (\varphi)\ [\varphi x \supset (y)\varphi y]$,

or equivalently

($T.2$) $\sim \mathrm{E}x \supset_x (\varphi)\ [(\exists y) \sim \varphi y \supset \sim \varphi x]$

[14] This of course is not true of the *symbol* (numeral) used to represent this number, which has various contingent properties, such as occurring (or not occurring) upon this page. Such a contingent property of the representing symbol does not induce a contingent property of the abstract object, i.e., it is not a contingent property of the number 3 that it is represented by a symbol occurring on this page. This last proposition is not, however, a truth of symbolical theory, but a complex philosophical thesis, viz., Platonism. For my argument above it is not requisite to maintain that Platonism is true, but simply that it is tenable or arguable, i.e., not to be rejected on solely logical grounds.

[15] *A qualitative property* (for which I shall here use variables "P", "Q", etc.) is a property denoted by a predicate which either (1) is a primitive predicate of the language, or (2) is definable in terms of primitive predicates by means of alternation and conjunction (only), in terms of these alone, and thus without negation and without any reference to particular individuals.

leads to difficulties. For if a property φ_1 is in the range of our predicate-variables "φ", "ψ", etc., so must $\sim\varphi_1$ be. Thus if we grant, as we must, that there is a property φ_1 such that $(\exists y) \sim \varphi_1 y$ and $(\exists y)\varphi_1 y$, then it is clear that the right-hand side of $(T.2)$ is false on logical grounds alone, so that $(T.2)$ leads to the unacceptable $(x)\mathrm{E}x$.[16]

The thesis (T) has the consequence,

(1) $(\exists P)\,[Px \;\&\; (\exists y) \sim Py] \supset \mathrm{E}x.$

This at once suggests the possibility of defining "E" as follows:

(E) $\mathrm{E} \underset{\mathrm{DF}}{=} (\lambda x)\,(\exists P)\,[Px \;\&\; (\exists y) \sim Py].$

This definition differs from the definition (E3) of the preceding section in referring only to qualitative properties and in deleting the "$\Diamond$" of that definition. Thus the definition modifies somewhat the circumstances of E's applicability—a thing we saw to be necessary.

Let us check the adequacy of (E). First, does it entail $(x)\mathrm{E}x$? To examine this, let us consider the proposition $(\exists x) \sim \mathrm{E}x$, with "E" taken in the sense of (E), namely

(2) $(\exists x) \sim (\exists P)\,[Px \;\&\; (\exists y) \sim Py].$

This is equivalent to

(3) $(\exists x)\,(P)\,[Px \supset (y)Py].$

Now (3) would be self-contradictory only if its denial, that is,

(4) $(x)\,(\exists P)\,[Px \;\&\; (\exists y) \sim Py],$

were to be a logical truth; that is, if every individual were, on solely logical grounds, to have a *qualitative* property not possessed by all others, just as it logically must uniquely have the (non-qualitative) property $(\lambda x)\,(x = x_1)$, where x_1 is the individual

[16] Another reason for confining this thesis to qualitative properties is the following: suppose that (T) applied, for example, to $(\lambda x)\,(x = x_1)$, where $\sim \mathrm{E}x_1$; i.e., to the property of being some particular nonexistent object. Then (T) would lead to: $\sim \mathrm{E}x \supset_x (x \neq x_1)$. We would thus be forced to a choice between (1) denying the self-identity of nonexistents, or (2) accepting $(x)\mathrm{E}x$. In this context, it is of interest to note that if nonexistence were to be regarded as a qualitative property, i.e., if $\sim$ E were to fall within the range of the variables "P," "Q," etc., then (T) would entail: $\sim \mathrm{E}x \supset_x [\sim \mathrm{E}x \supset (y) \sim \mathrm{E}y]$. This consequence is not acceptable for, since we cannot evade denial of $(y) \sim \mathrm{E}y$, this leads to $(x)\mathrm{E}x$.

in question. But this cannot reasonably be held to be a logical truth, and so (E) does not entail $(x)\mathrm{E}x$.

Again, let us see if—as with (E_4) of the preceding section—(E) denies existence to abstract objects which (such as numbers) have all of their properties by necessity. Is it possible for an individual object x_1 to satisfy

(5) $(\varphi)\ (\varphi x_1 \supset \Box \varphi x_1)$,

when also

(6) $(\exists P)\ (Px_1\ \&\ (\exists y) \sim Py)$?

This would be impossible only if (5) and (6) were incompatible with one another, that is, if their conjunction were self-contradictory, which is manifestly not the case.

Thus acceptance of (E) as a definition of "E" appears to be entirely consonant with all of the foregoing considerations as to the logic of the existence-concept. For, in particular, it entails neither $(x)\mathrm{E}x$, nor does it necessitate a denial of existence to abstract objects.

VI

I propose next to consider the bearing of the foregoing considerations regarding the logic of existence upon the theory of description. I will begin by accepting the position, widely held among logicians, that an adequate theory of description or designation must be such that the meaningfulness or the logical appropriateness of designating expressions ought not to hinge upon questions of existence.[17] We want to be able to discuss, designate, or describe objects without in any way prejudicing the question of their existence. The propriety of an object description ought not to be dependent upon questions of existence. Designation must not prejudge existence: we want to be able to refer to "the object having a certain property" without thereby either affirming or denying (tacitly or otherwise) that this object *exists*. In short, we do not want a theory of designation that has the consequence:

(1) $(\varphi)\mathrm{E}[(\imath x)\varphi x]$.

[17] Among those who take this view are Frege, Russell, and Quine. Hilbert and others, however, dissent.

In place of (1), a theory of designation that is to be satisfactory from the standpoint of existence considerations ought to accept only some weaker counterpart which qualifies φ by some additional existential requirement. We want therefore in place of (1) a substitute of the conditional form:

(2) $(\varphi)\ (\ldots \supset \mathrm{E}[(\imath x)\varphi x])$.

The determination of the condition ". . ." must of course depend upon the definition of the description operator "$\imath$".

Consider the contextual definition of "$\imath$" given in *Principia Mathematica:*[18]

(D) $[(\imath x)\varphi x]F[(\imath x)\varphi x] \underset{\mathrm{DF}}{=\!=} (\exists y)\ [(\varphi x \equiv_x (x = y))\ \&\ Fy]$,[19]

where F is understood to be an arbitrary propositional function of one variable. By this definition we have:

(3) $\mathrm{E}[(\imath x)\varphi x] \equiv_\varphi (\exists y)\ [(\varphi x \equiv_x [x = y])\ \&\ \mathrm{E}y]$.

From (3) we derive

(4) $(\varphi)\{(\exists y)\ [(\varphi x \equiv_x [x = y])\ \&\ \mathrm{E}y] \supset \mathrm{E}[(\imath x)\varphi x]\}$,

which has the form of (2). The antecedent of (4) thus gives the condition which, *relative to* (*D*), it is necessary that a predicate φ satisfy before we are entitled to assert that $\mathrm{E}[(\imath x)\varphi x]$. With a different definition of "$\imath$", the form of this condition would, of course, also be changed. But so long as this condition is not trivial (i.e., universally satisfied), the theory of designation in question does not lead to (1), and is thus unobjectionable from the standpoint of the existential considerations here in view.

VII

It is of interest to explore the possibility of a theory of designation which avoids existential commitments altogether, even in the

[18] See *14.01.

[19] The scope notation on the left-hand side of this definition is necessary to provide a clear indication of the propositional function F in which substitution is intended. Otherwise the notation, e.g., $\sim F[(\imath x)\varphi x]$, would be equivocal between (1) $\sim (\exists y)[(\varphi x \equiv_x x = y)\ \&\ Fy]$ on the one hand, and (2) $(\exists y)[(\varphi x \equiv_x x = y)\ \&\ \sim Fy]$ on the other. See Chapter III of the "Introduction" to the second edition of *Principia Mathematica.*

sense, weaker than that of the preceding section, of avoiding the consequence:

(1) $(\varphi)\ (\exists y)\ (y = (\imath x)\varphi x)$.

Now any contextual definition of "$\imath$" which, like that of *Principia Mathematica*, has the general form,

(2) $F[(\imath x)\varphi x] \overline{\overline{\text{DF}}}\ (\exists y)\ [\ldots\ \&\ Fy]$,

will, letting F be $(\lambda z)\ (z = (\imath x)\varphi x)$, have the consequence,

(3) $[(\imath x)\varphi x = (\imath x)\psi x] \equiv_{\varphi}\ (\exists y)\ [\ldots\ \&\ y = (\imath x)\varphi x]$.

Since the left-hand side of (3) is an inevitable tautology, (4) entails

(4) $(\varphi)\ (\exists y)\ (y = (\imath x)\varphi x)$,

so that there is here no possibility of rejecting (1).

This line of reasoning suggests the possibility of a contextual definition of "$\imath$" which, instead of having the form (2), is of the form:

(5) $F[(\imath x)\varphi x] \overline{\overline{\text{DF}}}\ (y)\ [\ldots \supset Fy]$.

Now a simple definition of this kind is:

(D') $[(\imath x)\varphi x]F[(\imath x)\varphi x] \overline{\overline{\text{DF}}}\ (y)\ (y \epsilon\ \hat{x}\ \varphi x \supset Fy)$.[20]

This definition entails the following specification of $(\imath x)\varphi x$: (i) when there is exactly one individual, say a, such that φa, then $(\imath x)\varphi x = a$;[21] (ii) when there is no individual for which φ obtains, $F[(\imath x)\varphi x]$ is always true, for any propositional function F,[22] and finally (iii) when there are several individuals—say the entire set $S = \{a, b, \ldots\}$—such that φx obtains, then $F[(\imath x)\varphi x]$ is true or false according as F does or does not obtain for all the elements of S.[23]

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[20] Here again the scope notation is necessary for reasons analogous to those explained above. This definition was recently proposed by me in the paper, already cited, on "Definitions of 'Existence.'" I was led to it not by the present line of thought, but by the considerations discussed in connection with propositions (6) and (7) below.

[21] In this case $\hat{x}\varphi x = \{a\}$. Now let F be $(\lambda z)[(\imath x)\varphi x = z]$. Then (D′)yields

(5.1) $[(\imath x)\varphi x = (\imath x)\psi x] \equiv (y)[y \epsilon \{a\} \supset (\imath x)\varphi x = y]$,

which entails $(\imath x)\varphi x = a$.

[22] In this case $\hat{x}\varphi x = \Lambda$. Here (D') becomes

(5.2) $F[(\imath x)\varphi x] \equiv (y)[y \epsilon \Lambda \supset Fy]$,

whose right-hand side is trivially true, since "$y \epsilon \Lambda$" is uniformly false.

[23] In this case (D') becomes

(5.3) $F[(\imath x)\varphi x] \equiv (y \epsilon S \supset_{y} Fy)$,

This definition of "ι," like that of *Principia Mathematica*, has the characteristic contextualistic feature of Russell's classic theory of descriptions,[24] namely, while it always determines a truth-status for statements of the form "$F[(\iota x)\varphi x]$," it does not invariably specify $(\iota x)\varphi x$ as some existing thing. In this regard (D'), as well as the *Principia* definition, differs from those of Frege and of Quine. On Frege's definition,[25] $(\iota x)\varphi x$ is a, Λ, and the class S, respectively in the three cases, and on Quine's definition,[26] $(\iota x)\varphi x$ is a, Λ, and Λ, for these three cases.

The choice between various definitions of definite description is, of course, in a sense a matter of "convention," since no one definition can be shown to be "the correct" one. But of course the choice between alternative definitions is not purely arbitrary. We have distinct, although informal, guiding conceptions regarding the consequences to which an adequate theory of descriptions should lead, and evaluate alternate definitions in terms of the informal, and as it were pre-theoretic, acceptability of the theories to which they give rise in their consequences. And this acceptability may in turn depend upon the theoretical purposes in view. It may, for example, differ as between contexts of mathematical elegance and philosophical congruity.

The definition (D'), it should here be noted, has one advantage *vis à vis* its alternatives. It guarantees generally and without further ado that if every object having a certain property φ has

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whose right-hand side is true if, and only if, F holds for all elements of S. This concept of description is closely analogous with the concept of *restricted quantification* due to Theodore Hailperin (*Journal of Symbolic Logic*, XXII (1957), 19-35). Hailperin introduces the "restricted quantifier," "$(\nu x\varphi x)$" in such a way that "$(\nu x\varphi x)Fx$" amounts to "for every x such that φ (if any), Fx." Thus "$F[(\iota x)\varphi x]$," with description taken in the sense of (D'), amounts to Hailperin's "$(\nu x\varphi x)Fx$." The motivation that led Hailperin to the concept of restricted quantification is essentially identical with that leading to (D'), viz., the avoidance of existential presuppositions. The writer wishes to take this opportunity to thank Professor Hailperin for his very helpful comments on an early draft of this paper.

[24] This is set forth in his paper "On Denoting," *Mind*, N.S. XIV (1905), 479-493.

[25] *Grundgesetze der Arithmetik* (Jena, 1873), vol. I, p. 19.

[26] *Mathematical Logic* (Cambridge, 1947), pp. 147-149. A convenient comparative discussion of alternative definitions of "ι" is §§ 7-8 of R. Carnap's *Meaning and Necessity* (Chicago, 1947).

also another property ψ, that is, if $(x)\ (\varphi x \supset \psi x)$, then the object specified as $(\imath x)\varphi x$ *also* must have the property ψ; in other words, it guarantees that

(6) $(x)\ (\varphi x \supset \psi x) \supset_{\varphi, \psi} \psi\ [(\imath x)\varphi x]$.

To see that this is so, we must first note that, in general,

(7) $(x)\ (\varphi x \supset \psi x) \supset (y)[y \epsilon \hat{x}\varphi x \supset \psi y]$.

and that (D') gives us:

(8) $\psi[(\imath x)\varphi x] \equiv (y)\ (y \epsilon x \varphi x \supset \psi y]$.

But (7) and (8), taken together, entail (6).

This fact yields to (D') a certain advantage of analogy, for (6) clearly holds for the nondegenerate cases of descriptive designation, and a definition of "$\imath$" which extends this into a general principle gains (other things being equal) some degree of advantage. It should be noted also that (6) entails

(9) $(\varphi)\varphi[(\imath x)\varphi x]$,

which again is a "natural" and thus desirable feature of the definition (D').

VIII

I wish now to draw attention to some consequences of the theory of description based on (D') which are of particular interest for the logical theory of existence. I will here talk about properties which are *not* exemplified, such as "being a unicorn," so that there exists no object X such that φX. Here then we have $\hat{x}\varphi x = \Lambda$. In such cases, as we have seen, the theory of descriptions based on (D') leads to the consequence that for *any* propositional function F, "$[(\imath x)\varphi x]F[(\imath x)\varphi x]$" is *always* true, that is, that any statement "about" $(\imath x)\varphi x$ (in this sense) is true. We are here preserved from outright contradiction by the scope notation, because for any unrealized property φ, both "$(y)\ (y \epsilon \hat{x}\varphi x \supset Fy)$" and "$(y)\ (y \epsilon x \varphi x \supset \sim Fy)$" are true, due to the falsehood of their antecedents. The contradictory of "$[(\imath x)\varphi x]F[(\imath x)\varphi x]$" is *not* "$[(\imath x)\varphi x] \sim F[(\imath x)\varphi x]$," but is "$\sim [(\imath x)\varphi x]F[(\imath x)\varphi x]$."

Thus if description is defined by means of the definition here in view, we have, for example, that, for unrealized φ,

(1) $(\imath x)\varphi x \epsilon \Lambda$,

however odd-seeming, is true, and perfectly innocuous. And, of course, (1) does not lead to $(\exists x) x \epsilon \Lambda$.

There is no reason whatsoever why we should not regard such items $(\imath x)\varphi x$, where φ is unrealized, as *nonexistent things*, that is, as purely conceptual objects.

Among modern logicians, Quine especially has been concerned to argue against such a conception of possible (but nonexistent) objects. Thus in his very amusing and well-written paper "On What There Is," he writes,

> Possibility, along with the other modalities of necessity and impossibility and contingency, raises problems. . . . But we can at least limit modalities to whole statements. We may impose the adverb "possibly" upon a statement as a whole, and we may well worry about the semantical analysis of such usage; but little real advance in such analysis is to be hoped for in expanding our universe to include so-called *possible entities*. I suspect that the main motive for this expansion is simply the old notion that Pegasus, e.g., must be because it would otherwise be nonsense to say that he is not.[27]

Unfortunately this line of argument will not do at all, because the doctrine of nonexistent possibles can without difficulty be formulated in sentences with suitable use of modalities. The following statement represents the essential condition under which an object n is a nonexistent possible:

$$(\mathcal{N}) \quad \sim (\exists x)\ (x = n)\ \&\ \Diamond(\exists x)\ (x = n).$$

This asserts that there exists (in the sense of existential quantification) nothing identical with n, although it is possible that there might. Now we must be careful to refrain from the temptation to infer, from $(\mathcal{N})$, that,

$$(\mathcal{N}') \quad (\exists y)\ [\sim (\exists x)\ (x = y)\ \&\ \Diamond(\exists x)\ (x = y)].$$

For $(\mathcal{N}')$ entails "$(\exists y)\ (x)\ (x \neq y)$" and this is incompatible with "$(x)\ (x = x)$." But this merely goes to show that nonexistent possibles cannot be taken to lie within the range of values of our individual variables, "x", "y," and so forth, so that Existential Generalization is not valid with respect to such objects as the n of $(\mathcal{N})$. The self-contradictory character of $(\mathcal{N}')$ must *not* be

[27] *Review of Metaphysics*, II (1948), 21-38; see p. 22. Reprinted in *Semantics and the Philosophy of Language*, ed. by L. Linsky (Urbana, 1952), pp. 189-206.

construed to show that there "are" no nonexistent possibles, but only that they are not in the range of values of individual variables.

We must therefore recognize that, if φ is not exemplified, the "conceptual object" $(\imath x)\varphi x$ does not fall within the range of our individual variables "x", "y", "z." . . . Thus Existential Generalization is simply not valid with respect to $(\imath x)\varphi x$, so that (1) does not entail:

(2) $(\exists x)x \in \Lambda$.

Again, when φ is not realized by any object, "$\mathrm{E}[(\imath x)\varphi x]$" is true. Thus "$\mathrm{E}[(\imath x)\varphi x]$" entails neither "$(\exists x)\varphi x$" nor "$(\exists x)\mathrm{E}x$." And, more generally, "$\psi[(\imath x)\varphi x]$" entails neither "$(\exists x)\varphi x$" nor "$(\exists x)\psi x$." We have quite succeeded in our goal of deliberately keeping our theory of descriptions free from existential presuppositions and implications.

In his paper "On What There Is," Quine has great fun with possible (nonexistent) entities.

> Take, for instance, the possible fat man in that doorway; and, again, the possible bald man in that doorway. Are they the same possible man, or two possible men? How do we decide? How many possible men are there in that doorway? Are there more possible thin ones than fat ones? How many of them are alike? Or would their being alike make them one? Are no *two* possible things alike? Is this the same as saying that it is impossible for two things to be alike? Or, finally, is the concept of identity simply inapplicable to unactualized possibles? But what sense can be found in talking of entities which cannot meaningfully be said to be identical with themselves and distinct from one another.[28]

But once we have made an end to the amusement to be had in this way, we must face the sobering thought that the denial of possible entities, that is, the thesis that all things exist, also leads to thoroughly unpalatable consequences, and in a much less frivolous way (as I have tried to show in Section III above).

After all, the problems so amusingly posed by Quine pose no insuperable theoretical difficulties. How many possible objects are there? As many as can be described. When are two possible objects alike? When their descriptions entail a similarity. When

[28] *Ibid.*, 23-24; L. Linsky, *op. cit.*, pp. 189-206.

are two possible objects identical? When their defining descriptions are logically identical (equivalent). The doctrine of possible objects poses no profound theoretical difficulties, for everything save existence alone (and its implications) remains precisely as with objects which "really" exist.

IX

In a logical system in which an *explicit* treatment of the conceptual objects of the type $(\imath x)\varphi x$ (where $\hat{x}\varphi x = \Lambda$) is to be possible, we are called on to introduce a new set of variables, "η," "ζ," "ξ," . . ., with the convention that, while

(1) $(x)\ (\exists y)\ (x = y)$

is true, so is

(2) $(\exists \eta)\ (x)\ (\eta \neq x)$.

Nor is there any reason why we should not have

(3) $(\exists \eta)\ (\exists \zeta)\ (\eta \neq \zeta)$,

that is, there is no reason why our criterion of identity for these new "objects" should not be such that $(\varphi \neq \psi) \rightarrow [(\imath x)\varphi x \neq (\imath x)\psi x]$, even in the face of $\hat{x}\varphi x = \hat{x}\psi x = \Lambda$.[29] These new Greek letter variables, then, would have for their range not only the existing objects, but also a class of (various) objects which, for want of a better word, might (in view of (2) above) be termed nonentities.

The nonentities, it can be shown, are all "elements" of the null class. For consider once again the definition (D') in the case of properties φ for which $\hat{x}\varphi x = \Lambda$. Letting Fz be $z \epsilon \Lambda$, we here obtain

(4) $[(\imath x)\varphi x \epsilon \Lambda] \equiv (y)\,[y \epsilon \Lambda \supset y \epsilon \Lambda]$,

which, the right-hand side being patently tautologous, entails:

(5) $(\imath x)\varphi x \epsilon \Lambda$.

We can thus say, without self-contradiction, that—however

[29] This leads to the strong criterion of identity that descriptions are identical only when the describing properties are (intensionally) identical. Clearly only some such strong intensional mode of identity can serve as a basis for discriminating among nonexistents.

great the verbal paradox may seem—the null class, that is, the class containing no (existing) elements, contains all nonentities.

That the seeming paradox of this approach is unreal, that is, that no outright inconsistency of any kind is engendered, can be readily seen. For what we have in effect done is to go over to a universe of discourse in which we effect a dichotomy into two mutually exclusive and exhaustive sub-universes, say A (the "existents") and B (the "nonentities"). Over the individuals of the first subuniverse we use Roman variables, over those of the union of the two sub-universes, Greek. We have, in effect, simply gone over to a two-sorted logic,[30] using the greater freedom of articulation here afforded to enlarge the meaning-scope of the existence concept represented by existential quantification.

I have elsewhere shown that a system of many-sorted (say n-sorted) logic can be transformed into a system of one-sorted logic, with variables ranging over a single all-inclusive domain.[31] This can be done by means of the introduction of various kinds of quantifiers, each kind pertaining to one of the n domains (i.e., there are n distinct general and correspondingly n distinct existential quantifiers), so that the domain-reference function comes to be absorbed by the quantifiers. With this approach, we can reformulate (1) and (2) above as

$$(6)\quad (\forall_1 x)\ (\exists_1 y)\ (x = y),$$

and

$$(7)\quad (\exists_2 x)\ (\forall_1 y)\ (x \neq y),$$

respectively. Here (7) or, equivalently,

$$(8)\quad \sim (\forall_2 x)\ (\exists_1 y)\ (x = y),$$

does *not* contradict (6) because a different type of general quantification is involved.

In such a system, in which the first mode of quantification is reserved exclusively for the domain of existents, we could now define "E" by means of the definition:

$$(9)\quad \mathrm{E} \underset{\mathrm{DF}}{=} (\lambda x)\ (\exists_1 y)\ (y = x).$$

[30] See H. Wang, "The Logic of Many-sorted Theories," *The Journal of Symbolic Logic*, XVII (1952), 105-116.

[31] For details see N. Rescher, "Many-sorted Quantification," *Proceedings of the 12th International Congress of Philosophy* (Padua, 1958).

This does indeed lead to

(10) $(\forall_1 x)\mathrm{E}x$,

but this is now perfectly acceptable.[32]

I had remarked in Section V above that the rejection of

(11) $(\exists y)\ (y = x) \rightarrow \mathrm{E}x$

has a seeming air of paradox about it. But this can now be smoothed out. For the paradox disappears once we recognize that an equivocation in the meaning of existential quantification is an inevitable result of speaking of two orders of entities: those which (actually) *exist*, and those which only "*subsist*" (i.e., do not exist save as *entia imaginationis*). When this equivocation is removed by explicit introduction of two kinds of existential quantification, we see that (11) is indeed legitimate and acceptable in the form,

(12) $(\exists_1 y)\ (y = x) \rightarrow \mathrm{E}x$,

but is not acceptable, and must be rejected in the form,

(13) $(\exists_2 y)\ (y = x) \rightarrow \mathrm{E}x$.

X

The theory of designation and existence which has been articulated in the preceding sections is a modernized recasting of the theory propounded by Hugh MacColl in a series of papers in *Mind* around the turn of the century.[33] To establish this identity I quote a few of the key passages of MacColl's discussion:

> [Let us take our "Symbolic Universe" or "Universe of Discourse" to be] composed of all things real or unreal that are named or expressed by words or other symbols in our argument or investigation. By this definition we assume our Symbolic Universe (or "Universe of Discourse") to consist of our universe of realities r_1, r_2, r_3, [34] etc., together with our universe of unrealities [nonentities] u_1, u_2, u_3, etc. . . . [p. 74.] When they [the majority of symbolic logicians] define Λ (or any other symbol) as indicating non-existence, and then assert that the equiv-

[32] Since "$\forall_1$" is intended by stipulation to have reference only to existents, $(\forall_1 x)\ (\Diamond \mathrm{E}x \supset \mathrm{E}x)$ is now quite innocuous.

[33] *Mind*, N.S. XIV (1905), 74-81, 295-296, 390-397, 401-402, and 578-580.

[34] In the interests of simplicity and readability I have here, and in a few instances below, modified the notation used by MacColl.

alence $\Lambda = \Lambda \cap A$ is always true, whatever the class A may be, they appear to me to make an assertion which cannot easily be reconciled with their data or definition. For suppose Λ to consist of the three unrealities u_1, u_2, u_3, and the class A to consist of u_3, r_1, r_2, r_3 (one unreality and three realities), the class $\Lambda \cap A$ common to both contains but one individual, the unreality u_3. We cannot therefore say that the class Λ, which contains three individuals, is the same as the class $\Lambda \cap A$, which contains but one. [p. 78.] Can we consistently assert, as the formula $\Lambda \subset A$ asserts, that the unreal (and therefore nonexistent) individuals u_1, u_2, etc., are contained in the class of real individuals r_1, r_2, etc.? It is hardly an answer to say that the symbol Λ, as logicians usually define it, does not denote an unreal class made up of unreal members, as I define it, but a null or empty class containing no members; for is not a null class containing no members equivalent to an unreal class made up of unreal members? . . . The crucial point which here separates me, I believe, from all other symbolists is that I regard the class Λ, whether empty or made up of unrealities, as necessarily *excluded from every real class*; whereas they regard it as *contained in every class* whether real or not. [p. 578.]

I believe that these quotations suffice for my present aim of showing that the theory of designation and existence discussed above is substantially the same as that propounded by MacColl.

MacColl had no sooner enunciated his theory than it was sharply criticized.[35] The principal criticism was that of Bertrand Russell, who rejected it on the ground that it "conflicts with the law of contradiction":

> Mr. MacColl . . . regards individuals as of two sorts, real and unreal; hence he defines the null-class as the class consisting of all unreal individuals. This assumes that such phrases as "the present King of France," which do not denote a real individual, do, nevertheless, denote an individual, but an unreal one. This is essentially Meinong's theory, which we have seen reason to reject because it conflicts with the law of contradiction.[36]

Now the criticism of Meinong to which Russell here refers is this:

> [Meinong's] theory regards any grammatically correct denoting phrase

[35] B. Russell, "The Existential Import of Propositions," *Mind*, N.S. XIV (1905), 398-401; "On Denoting," *ibid.*, 479-493 (see especially p. 491); A.T. Shearman, "Note on Logical Existence," *ibid.*, p. 440.

[36] "On Denoting," *Mind*, N.S. XIV (1905), 491.

as standing for an *object*. Thus "the present King of France," "the round square," etc., are supposed to be genuine objects. It is admitted that such objects do not subsist, but nevertheless they are supposed to be objects. This is in itself a difficult view; but the chief objection is that such objects, admittedly, are apt to infringe the law of contradiction. It is contended, for example, that the existent present King of France exists, and also does not exist; that the round square is round, and also not round; etc. But this is intolerable; and if any theory can be found to avoid this result, it is surely to be preferred.[37]

This criticism of Russell's amounts to rejecting a theory of descriptions based on a contextual definition of "ι" which, like (*D'*) of Section X above, has the consequence that in the case $\hat{x}\varphi x = \Lambda$, "$F[(\iota x)\varphi x]$" is always true. This is the basis, and indeed the sole ground, of Russell's objection. But in the first place it is simply false that, verbal oddities aside, such a theory leads to contradiction. And in the second place Russell's objection is open to the decisive counter *argumentum ad hominem* that his *own* theory of descriptions (based on the definition of "ι" given as (*D*) in Section VI) leads to the consequence that in this case "$F[(\iota x)\varphi x]$" is always false, and this is clearly every bit as much (or little) in conflict with the "principle of contradiction." The fact is that in 1905 Russell had not yet recognized the importance of scope notations for the theory of descriptions. His own subsequent discoveries in this connection suffice fully to rehabilitate MacColl's theory of descriptions against his criticisms.

In short, neither Russell's nor for that matter any other attack upon MacColl's theory of description and existence can be regarded as successful.

MacColl's insistence that logic must make room not only for existing things, but also for things which are possible (but not actual), is characteristic of his turn of mind. He alone among turn-of-the-century logicians is keenly alive to modal distinctions. Thus he writes:

> They [i.e., other symbolic logicians] divide their propositions into two classes, and *two only*, the *true* and the *false*. I divide propositions not only into true and false, but into various other classes according to the

[37] *Ibid.*, pp. 482-483.

necessities of the problem treated; as for example into *certain, impossible, variable* [i.e., contingent].[38]

XI

I wish now, at long last, to bring the discussion back to the ontological argument. The pivotal traditional objection to the ontological proof derives from a philosophical repugnance to the procedure of "defining into existence"; to affirming that an object exists simply and solely in virtue of the manner in which it is defined, without *ex machina* assumption of any existential presuppositions or postulates. The opponent of the ontological proof rejects the legitimacy of such a procedure, denying that there is any property which, when inserted into the definition of an object as one of its essential attributes, inevitably has the consequence that said object exists. What is denied, then, is that there is a property φ such that

(1) $\Box E[(\imath x)\varphi x]$.

We have seen in the foregoing discussion of the theory of description (Section VII) that it is, or can be, a general principle of the logic of definite description that

(2) $\Box(\varphi)\varphi[(\imath x)\varphi x]$.

Now if existence is a predicate, that is, if "E" is held to lie within the range of the predicate variables "φ," "ψ," and so forth, then (2) leads at once to

(3) $\Box E[(\imath x)Ex]$.

Therefore, if "E" is a predicate, then it can be argued that an object into whose *conception* the property it represents, namely existence, is inserted as an essential, defining property, must necessarily exist.[39]

The denial of the predicational status of existence affords—as Kant rightly saw—an adequate logical strategem for the frustration of the ontological argument. But as regards just this point,

[38] "Symbolic Reasoning (V)," *Mind*, XII (1903), 355-364; see p. 356.

[39] It should, however, be recalled that, on the theory of descriptions here presented, $E[(\imath x)\varphi x]$ does not entail either $(\exists x)\varphi x$ or $(\exists x)Ex$. (See Section VIII above.)

our discussion has been wholly inconclusive. Within the scope of the present investigation we have found no reason either for or against holding existence to be a predicate.

XII

In conclusion, I should like to review some of the major points that have emerged in the course of the foregoing analysis of existence concepts:

(1) An adequate theory of existence must reject $(x)\mathrm{E}x$, that is, the thesis that all things exist. It cannot otherwise give due recognition to the fact that there are nonexistent though not unrealizable states of affairs.

(2) A satisfactory formal analysis of the concept of existence can be provided in terms of the thesis that nonexistent objects can have no nontrivial qualitative properties (i.e., no such properties not possessed by everything).

(3) A theory of description can be built up which (i) involves no existential presuppositions, and (ii) has the feature that every statement "about" (in a suitable sense) nonexistent objects will be true.

(4) A theory of distinct nonexistent objects is possible, but requires a highly intensional criterion of identity for these objects, since extensionally all unrealized descriptions are clearly the same.

(5) The theory of descriptions envisaged in the previous remarks is closely similar in its essentials to a short-lived theory propounded by Hugh MacColl in *Mind* around the turn of the century, and defended by him with poor success against various criticisms by other symbolic logicians, notably Bertrand Russell.

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JONATHAN EDWARDS ON FREE WILL AND MORAL AGENCY

THE APPEARANCE of a new edition of Edwards' *Freedom of the Will*[1] as Volume I in the Yale University Press Edition of the *Works* of the man described by both the general editor, Perry Miller, and the editor of this volume, Paul Ramsey, as "the greatest philosopher-theologian yet to grace the American scene" (pp. viii, 2) is an event of philosophical importance. As a landmark in the history of American thought, this formidable work has become the shopworn subject of much literary lecturing in a field not notable for precision of thought. Selections from it appear in textbook anthologies but these, taken out of their context in the *Enquiry*, are open to misinterpretations that do less than justice to the vigor, toughness, and penetration of the book itself. The new edition should be welcomed not merely as a handsome new receptacle for the literary remains of an eminent early American but as an opportunity to appraise at first hand a major and highly controversial contribution by a first-rate mind to the clarification of a philosophical issue that has not yet been resolved and on which accordingly we may still have much to learn. It is as such a contribution that I shall here discuss it.

The original title page of the *Enquiry*, happily reproduced in this edition, provides an essential clue for the understanding of the work as a whole. The subject is not "the freedom of the will" in general. What is offered is "A careful and strict Enquiry into the *modern* prevailing notions of that Freedom of the Will which is supposed to be essential to Moral Agency, Vice and Virtue, Reward and Punishment, Praise and Blame." The author is Jonathan Edwards, A.M., pastor of the Church in Stockbridge. His text is *Romans* ix, 16: "It is not of him that willeth. . . ." More specifically, what Edwards proposes to consider is "the Arminian notion of the freedom of the will, and the supposed necessity of it

[1] Jonathan Edwards, *Freedom of the Will*. Edited by Paul Ramsey. New Haven, Yale University Press, 1957. Pp. vii, 494. All further references are to the pages of this book. All italics in quoted passages are Edwards' or Ramsey's own.

in order to moral agency, or in order to anyone's being capable of virtue or vice, and properly the subject of command or counsel, praise and blame, promises or threatenings, rewards or punishments" (p. 171). This is important to him for a further reason: " 'Tis easy to see how the decision of most of the points in controversy, between Calvinists and Arminians, depends on the determination of this grand article concerning *the freedom of the will requisite to moral agency;* and that by clearing up and establishing the Calvinistic doctrine in this point, the chief arguments are obviated, by which Arminian doctrines in general are supported, and the contrary doctrines demonstratively confirmed" (p. 431).

Hence the central theme of his book is "*the freedom of the will requisite to moral agency.*" Edwards is bound to maintain that men *are* moral agents and as such the proper subjects of the "command or counsel, praise and blame, promises or threatenings, rewards or punishments" with which as pastor of the church in Stockbridge, and previously in Northampton, he was so vehemently concerned. But he is no less committed, as a Calvinistic theologian, to hold that "as to freedom of the will lying in the power of the will to determine itself, there neither is any such thing, nor any need of it, in order to virtue, reward, commands, counsels, etc." (p. 436). The Arminians held that such self-determination was requisite to moral agency and that without it men could not justly be regarded as proper subjects of moral judgment. Edwards denies this and presents an elaborate and ingenious account of the true "determination of the will" to demonstrate the soundness of his own position and the absurdity of that of his opponents. This account must show the compatibility of the language of moral judgment, of moral agency and responsibility, with the doctrines of total depravity, foreordained election, and arbitrary grace affirmed in Calvinistic theology. The reconciling middle term is a philosophical theory which purports to show that the determination of the will that all sensible men acknowledge, and that moral agency requires, implies a kind of "moral inability" and that the sternest tenets of Calvin imply no other moral inability than this, while the attempts of Arminians to evade this implication result in palpable confusions of thought. In the final chapter of the *Enquiry* he tells us that

The things which have been said, obviate some of the chief objections of Arminians against the Calvinistic doctrine of the *total depravity and corruption of man's nature*, whereby his heart is wholly under the power of sin, and he is utterly unable, without the interposition of sovereign grace, savingly to love God, believe in Christ, or do anything that is truly good and acceptable in God's sight. For the main objection against this doctrine is, that it is inconsistent with the freedom of man's will, consisting in indifference and self-determining power; because it supposes man to be under a necessity of sinning, and that God requires things of him, in order to his avoiding eternal damnation, which he is unable to do; and that this doctrine is wholly inconsistent with the sincerity of counsels, invitations, etc. Now this doctrine supposes *no other necessity* of sinning, than a moral necessity; which, as has been shewn, don't at all excuse sin; and supposes *no other inability* to obey any command, or perform any duty, even the most spiritual and exalted, but a moral inability, which, as has been proved, don't excuse persons in the nonperformance of any good thing, or make 'em not to be the proper objects of commands, counsels and invitations. And moreover, it has been shewn, that there is not, and never can be, either in existence, or so much as in idea, any such freedom of will, consisting in indifference and self-determination, for the sake of which, this doctrine of original sin is cast out; and that no such freedom is necessary, in order to the nature of sin, and a just desert of punishment [pp. 432-433].

I have quoted this paragraph in full because it brings the long, involved argument of the *Enquiry* into proper focus. Its conclusion is what Edwards' analysis has been aiming at from the start, and when it is established the work ends with the pious observation that, as Edwards puts it—paraphrasing I Corinthians, i, 19, 20—"the foolishness of God is wiser than men" (p. 439). The last word in the *Enquiry* is "Amen," and appropriately so. The "greatest philosopher-theologian yet to grace the American scene" was a theologian first and last and a philosopher only in between and where such "enquiry" served a higher purpose. Unless we keep this purpose as firmly in mind as Edwards himself did, we shall fail to appreciate the power or the limitations of his thinking.

Nonetheless, when seen in its true context, this philosophizing is remarkably acute and illuminating. It has to do essentially with

the nature of "the will" and its determination. This is a problem very relevant to Edwards' pastoral function. For, as he tells us, "All virtue and religion have their seat more immediately in the will, consisting more especially in right acts and habits of this faculty. And the grand question about the freedom of the will, is the main point that belongs to the science of the will. Therefore I say, the importance of this subject greatly *demands* the attention of Christians, and especially of divines" (p. 133). This applies most particularly to the issue concerning moral agency and accountability. "When a thing is *from* a man, in that sense, that it is from his will or choice, he is to blame for it, because his will is *in it:* so far as the will is *in it*, blame is *in it*, and no further. Neither do we go any further in our notion of blame, to inquire whether the bad will be 'from' a bad will: there is no consideration of the original of that bad will; because according to our natural apprehension, blame *originally consists in it*" (pp. 427-428). For moral purposes, the goodness or badness of acts of will is an ultimate fact, and external actions are properly said to be good or evil when they are from our choice, when our wills are in them, for then *we* are in them—"not so much because they are from some *property* of ours, as because they are our *properties*" (p. 428). Here the will *is* the man as moral agent, and it is by the moral quality of his acts of willing that he is properly to be judged. Where there is a will there is a moral agent.

But while willing is a moral ultimate, moral action is analyzable into a sequence of events linked by necessary relations of cause and consequence. The framework of this analysis is borrowed from Locke's great chapter on "Power" in the *Essay concerning Human Understanding* but shrewdly modified by Edwards to suit his own quite different purposes. "The faculty of the will is that faculty or power or principle of mind by which it is capable of choosing: an act of the will is the same as an act of choosing or choice" (p. 137). "Choice" in Edwards' use has, however, a very broad denotation. "So that whatever names we call the act of will by—choosing, refusing, approving, disapproving, liking, disliking, embracing, rejecting, determining, directing, commanding, forbidding, inclining or being averse, a being pleased or displeased with—all may be reduced to this of choosing. For the soul to act voluntarily is evermore to act electively" (*ibid.*).

Such acts of will, or "volitions" as Edwards more usually calls them, are the effects of antecedent causes and in their turn the causes of those voluntary actions in which a man is properly said to act freely or as he wills, or pleases. Such actions are, for example, the bodily movements by which we go after what we want. "The thing nextly chosen or preferred when a man wills to walk, is not his being removed to such a place where he would be, but such an exertion and motion of his legs and feet, etc. in order to it. And his willing such an alteration in his body in the present moment, is nothing else but his choosing or preferring such an alteration in his body at such a moment, or his liking it better than the forbearance of it" (p. 138). On this analysis Edwards can maintain, as against Locke, that "a man never, in any instance, wills anything contrary to his desires, or desires anything contrary to his will" (p. 139). For, with respect to what is "nextly chosen," to will an action is to be pleased to do it, and when a man does as he pleases he does what, in that specific situation, it pleases him to do; "a man's doing as he wills, and doing as he pleases, are the same thing in common speech" (*ibid.*). And in this matter Edwards follows what he regards as common speech. Now "liberty" in common speech "is power, opportunity, or advantage that anyone has, to do as he pleases. Or in other words, his being free from hindrance or impediment in the way of doing, or conducting in any respect, as he wills" (p. 163). This—"that power and opportunity for one to do and conduct as he will"—is *all* that is meant by "what is vulgarly called liberty" (p. 164). Here, again, Edwards is happy to follow common use. Hence, in an often quoted passage: "Let the person come by his volition or choice how he will, yet, if he is able, and there is nothing in the way to hinder his pursuing and executing his will, the man is fully and perfectly free, according to the primary and common notion of freedom" (*ibid.*).

It should be noted here that *this* freedom belongs *not* to the act of will or volition itself, but to the voluntary action which is its effect, "without taking into the meaning of that word, anything of the cause or original of that choice; or at all considering how the person came to have such a volition" (*ibid.*). How or whether acts of volition are determined by antecedent causes has *nothing to do* with the question as to whether or not the actions that are

the effects of such volitions are free. These latter are free when they are the effects of volitions, when in performing them a man does as he pleases, and to do as one pleases is to perform an action that is caused by an act of volition, of choice or of will. *So far* the question of the determination *of the will*, or of acts of volition themselves, need not be raised.

It is, however, the main purpose of Edwards' analysis to raise and answer just this question. His answer to it is emphatic. "To talk of the determination of the will, supposes an effect, which must have a cause. If the will be determined, there is a determiner" (p. 141). Given his prior analysis of willing as the occurrence of acts of volition, the "grand inquiry, what determines the will" becomes the more specific question of what causes the mental events that are acts of will, or of volition. To this, too, he has an emphatic answer, though not always a consistent one. Acts of will are caused by motives. Or "the will is always determined by the strongest motive, or by that view of the mind which has the greatest degree of previous tendency to excite volition" (p. 148). What this more precisely means we shall have later to inquire. But that it is the cornerstone of Edwards' whole account and "the thing of chief importance to the purpose of the ensuing discourse" (*ibid.*) there can be no doubt.

For what Edwards wants to establish is a moral necessity involved in the determination of the will, a necessity "consisting in a certain connection between motives and volitions" (p. 466). The way in which this connection is established is by maintaining as self-evident that "every act of will whatsoever, is excited by some motive," since if it has no motive it has no end, it seeks nothing. "And if it seeks nothing, then it don't go after anything, or exert any inclination or preference towards anything. Which brings the matter to a contradiction; because for the mind to will something, and for it to go after something by an act of preference and inclination, are the same thing" (p. 225).

Then comes the clincher. "But if every act of the will is excited by a motive, then that motive is the cause of the act of will. If the acts of the will are excited by motives, then the motives are the causes of their being excited; or, which is the same thing, the cause of their being put forth into act and existence. And if so,

the existence of the acts of the will is properly the effect of their motives. . . . And if volitions are properly the effects of their motives, then they are necessarily connected with their motives. . . . Thus it is manifest, that volition is necessary, and is not from any self-determining power in the will: the volition which is caused by previous motive and inducement, is not caused by the will exercising a sovereign power over itself, to determine, cause and excite volitions in itself" (pp. 225-226).

I find this a fascinating passage. Once its premises are accepted and in the terminology of Edwards' analysis they are analytically implied, the grip of "moral necessity" is indeed upon us. An act of volition or choice cannot choose to come into existence, for until it has been "put forth into existence" by a previous cause it simply is not there to cause or determine anything. When it does exist it cannot choose but be just the choosing, preferring or "liking better" that it is. Nor can the agent act *voluntarily* from any other choice or preference than the one he has. In acting as he pleases he necessarily does what pleases him, and his being pleased to do so is the effect of previous causes over which, as an effect, it can, of course, have no control. And since the will *is* just such acts of volition, there is indeed no place in it for any self-determining power. To say that each act of volition is caused by a previous act of volition will not help, for about the previous volition the same question of its "motivation," that is, its causation, will arise and we must come at last to previous causes that are not volitions, but from which the entire sequence follows with necessity, or else say that every choice, "even the first," is the effect of a prior choosing. And that, as Edwards loves to say, "brings the matter to a contradiction." This, of course, is just the absurdity that he found in all "Arminian" accounts of "self-determination."

But while the man is morally unable, in any act of volition, to will anything but what, as the necessary consequence of antecedent causes, he does will—"for that would be to suppose the will, at present, to be otherwise than, at present, it is" (p. 161) —he is still a proper subject for moral praise or condemnation. "Moral inability" which "consists in opposition or want of inclination" "don't excuse" (p. 159). However his choice is

caused, a man is free when he is able to act as he chooses, that is, when his action is voluntary or the effect of his own choosing or preferring. He then acts as he pleases, and if his pleasing, or the "inclination of his heart" is bad, that just fastens the guilt the more firmly upon him. Here "the thing wanting is not a being *able*, but a being *willing*" (which, as Edwards has shown, is a kind of moral inability); "nothing is wanting but a will" (p. 162). And the very want of such a will "is a moral inability to exert it" (p. 306). Of such a man Edwards says, "His moral inability, consisting in the strength of his evil inclination [or lack of a good one], is the very thing wherein his wickedness consists" (p. 309). It is such evil inclination that makes sin hateful and "The thing which makes sin hateful, is that by which it deserves punishment; which is but the expression of hatred" (p. 339). There is much more in this vein in Edwards, but this is enough to make his meaning plain. It is essential to his doctrine *both* that a man should *have* a moral will (how else could he blame him?) and that he should be morally incapable of any other use of it than that to which, by causes beyond his will or choice, it has been "previously" determined. This, so far from being an unwelcome consequence, is just the one at which he was aiming from the start. Not only is salvation "not of him that willeth" but willing itself in its moral nature is inherently under the "sovereignty" of causes that it cannot "determine" or direct. The virtue of the saint and the vice of the sinner are simply the moral qualities of their acts of volition and the necessity, by which these volitions are what they are as the effects of a previous causal determination which is not of their determining, *is* a moral inability for them to be other than they are and, in the circumstances, must be. So far as the determination of the will is concerned there is in total depravity "no other inability" than this. And if moral inability "don't excuse" then total depravity "don't" either. It simply makes the sinner more obviously deserving of damnation. The inhumanity of this doctrine may shock us but its Calvinistic correctness is beyond reproach.

The account of Edwards' theory so far given is, I believe, the only one that makes sense of his argument in its context and as a whole. It differs, however, from current interpretations of his

philosophy, and particularly from that offered by Ramsey in his Introduction to this edition. And there are features of Edwards' own account with which it appears to be inconsistent. These alternative interpretations must now be considered.

Chief among them is the notion that Edwards does not *really* reject the "freedom of the will," but only those "Arminian" versions of such freedom as were current in his time. "Freedom of the will" is properly freedom to act *as* we will or as we please, and this freedom Edwards of course does not deny. On the contrary, it is essential to his account of moral agency, and of praise and blame. And the "moral inability" on which he insists is not incompatible with *this* freedom—the only sort that sensible people (as distinguished from "philosophers, theologians and polemic divines") have ever been concerned to defend. Ramsey's Introduction will do much, I am afraid, to give color and currency to this interpretation. For he writes of Edwards' analysis of "the free act of volition" (p. 15), "an act of free, responsible volition" (p. 25), and "an act of free volition" (p. 44), and tries to show that in Edwards' "phenomenological" treatment of the subject such an *act of volition* is free no matter what its causes may have been or whether it was caused or not. He tells us that "In defining freedom and analyzing the nature of an act of volition, questions of what *goes before* an act of willing should not be raised. By *placing brackets around* all such questions and removing them from consideration, we can be sure of sticking close to the actual *experience* of freedom and not be tempted to import into the discussion notions of freedom that are the product of confused metaphysical speculation" (p. 11). This is offered as an exposition of Edwards' own procedure. Following this path Ramsey affirms that, for Edwards, "Freedom of the will pertains to those acts of volition in which a man is 'free from hindrance in the way of doing, or conducting in any respect, as he wills' " (p. 13).

But the passage Ramsey cites does not say this. It says that freedom "is power, opportunity, or advantage that anyone has, to do as he pleases. Or in other words, his being free from hindrance or impediment in the way of doing, or conducting in any respect, as he wills" (p. 163). This is not a freedom of *acts of volition* at all but of action consequent upon such acts of volition,

a freedom not in choosing (and willing is choosing) but in acting as one wills or chooses. Ramsey appears to have confused the voluntary action which, in Edwards' theory, is the effect of willing with the act of volition which is the cause of such action and hence to have transferred to the latter what Edwards says about the former. Voluntary actions are "free" no matter how the acts of volition that cause them were determined. "Let the person come by his volition or choice how he will, yet, if he is able, and there is nothing in the way to hinder his pursuing and executing his will, the man is fully and perfectly free, according to the primary and common notion of freedom" (p. 164). The question of the causation of voluntary actions is never for a moment "bracketed." They are free *as* the effects of "acts of will" and it is as such only that they are worthy of praise or blame. What is provisionally "bracketed" is the question of the determination of the *acts of volition* that cause such actions. ("Let a man come by his volition or choice how he will.") To apply this notion of freedom to acts of will themselves, however, is for Edwards an absurdity. *Acts of will are not voluntary acts*, and the worst errors of the Arminians arise from transferring what is true of voluntary actions to the volitions that cause them. Section 2 of Part IV, "Definition of 'Action' and 'Agency,'" makes this quite explicit. There Edwards tells us that "the more usual signification of it [action] in vulgar speech, seems to be some motion or exertion of power that is voluntary, or that is the *effect* of the will; and is used in the same sense as 'doing': and most commonly 'tis used to signify *outward* actions" (p. 346). "If a man does something voluntarily, or as the effect of his choice, then in the most proper sense, and as the word is most originally and commonly used, he is said to act: but whether that choice or volition be self-determined, or no, whether it be connected with foregoing habitual bias, whether it be the certain effect of the strongest motive, or some extrinsic cause, never comes into consideration in the meaning of the word" (p. 347). It is hard to see how a man could say more plainly that the question of freedom of action is not a question of the determination of the will at all. To offer his account of *this* freedom as a "phenomenological" analysis of the determination of the will itself (and for Edwards will just *is*

acts of willing or volition) is patently to confuse acts of will with the voluntary actions which are their effects. Edwards himself has noted some consequences of this confusion.

> The thing which has led men into this inconsistent notion of action, when applied to volition, as though it were essential to this internal action, that the agent should be self-determined in it, and that the will should be the cause of it, was probably this; that according to the sense of mankind and the common use of language it is so, with respect to men's external actions; which are what originally, and according to the vulgar use and most proper sense of the word, are called "actions." Men in these are self-directed, self-determined, and their wills are the cause of the motions of their bodies, and the external things that are done; so that unless men do 'em voluntarily, and of choice, and the action be determined by their antecedent volitions, it is no action or doing of theirs. Hence some metaphysicians have been led unwarily, but exceeding absurdly, to suppose the same concerning volition itself, that that also must be determined by the will; which is to be determined by antecedent volitions, as the motion of the body is; not considering the contradiction it implies [pp. 348-349].

That this supposition, that is, that acts of volition are to be treated as voluntary actions, and the "freedom" appropriate to such action applied to them, really is absurd, if Edwards' theory is correct, is obvious. For in this case a volition could only be free if it were voluntary, that is, caused by a previous volition, and so on endlessly. If acts of volition are "free" it cannot possibly be in the sense in which voluntary actions are so. Liberty of action is not freedom of the will "in a certain sense"; it has nothing to do with either freedom or determination of the will. And to speak *in this sense* of a "free act of volition" is an absurdity.

Nor is there any other sense of freedom suggested by Edwards in which this term could properly be applied to *the will*, that is, to acts of volition. On the contrary, he holds that "the thing meant by liberty in common speech"—the liberty to do and conduct *as* one chooses—is "sufficient, and the only liberty which makes, or can make anyone a moral agent" (p. 171), while "as to freedom of will lying in the power of the will to determine itself, there neither is any such thing, nor any need of it, in order to

virtue, reward, commands, counsels, etc." (p. 436). Man is free when he acts as he pleases and is to blame when he uses his freedom badly. God, being "independent and self-moved," is incomparably more free in this respect and, in His infinite perfection, is never to be blamed. But this does not imply that God has a free *will*—that His acts of volition are free—nor is it clear, given Edwards' account of motivation, what sense could be made of such freedom. (*Cf.* Part IV, Section 7, "Concerning the Necessity of the Divine Will.") Hence, when Ramsey says, "there is nothing in Edwards' account of an act of free, responsible volition which precludes it from being independent and self-moved" (p. 25), the reply must be that there is in the *Enquiry* no account of any act of free, responsible volition at all, and that to speak of an act of volition as being self-moved is, on Edwards' own repeated showing, an absurdity. A self-moved act of volition would be one that had no motive, that "went after" nothing, and was in consequence no choosing or preferring at all. "Which brings us to a contradiction." To suggest, as Ramsey does, that there *might* be a self-determination *in* the act of willing itself (p. 24) is to propose a possible alternative to Edwards' theory, but not one that he himself could conceivably accept. On this theory, for the act of volition to determine itself would be for it to cause itself. As Edwards quite crushingly replies to a similar suggestion, which he labels an "evasion," such a self-determining volition must be "prior in the order of nature to itself, and distinct from itself" (p. 178) for determining is equivalent to causing and the cause is prior to and distinct from the effect. That Ramsey finds this reply "singularly weak" is evidence, I think, that he has not fully understood what Edwards means by the determination of the will.

Not all the confusion about Edwards' account of the determination of the will, however, can be fairly blamed on his interpreters. There is a basic unclarity in his own statement of the matter in Section 2 of Part I, "Concerning the Determination of the Will." There Edwards tells us that "By 'determining the will,' if the phrase be used with any meaning, must be intended, causing that the act of the will or choice should be thus, and not otherwise" —"to talk of the determination of the will supposes an effect,

which must have a cause" (p. 141). He further holds that "it is that motive, which, as it stands in the view of the mind, is the strongest, that determines the will" (*ibid.*). And that motive, for "an intelligent and voluntary agent" is always "apparent good," where good means that which is "most agreeable" or "pleasing to the mind." When properly understood, this, given his definition of willing as choosing, preferring, or being pleased or displeased with, and of voluntary action as acting as we please, is clearly a tautology. "There is scarcely a plainer and more universal dictate of the sense and experience of mankind, than that, when men act voluntarily, and do what they please, then they do what suits them best, or what is most agreeable to them. To say, that they do what they please, or what pleases them, but yet don't do what is agreeable to them, is the same thing as to say, they do what they please, but don't act their pleasure; and that is to say, that they do what they please, and yet don't do what they please" (pp. 147-148).

The interesting fact is that, in this chapter, Edwards comes close to recognizing this tautology. "I have rather chosen to express myself thus, that the will always *is* as the greatest apparent good, or as what appears most agreeable, is, than to say that the will is *determined* by the greatest apparent good, or by what seems most agreeable; because an appearing most agreeable or pleasing to the mind, and the mind's preferring and choosing, seem hardly to be properly and perfectly distinct. If strict propriety of speech be insisted on, it may more properly be said, that the voluntary action which is the immediate consequence and fruit of the mind's volition or choice, is determined by that which appears most agreeable, than the preference or choice itself; but that the act of volition itself is always determined by that in or about the mind's view of the object, which causes it to appear most agreeable" (p. 144). This leads Ramsey to say that for Edwards "Inclination or motive do not determine the will; they determine the action consequent upon an act of willing" (p. 18). And this would seem to be the correct interpretation of the passage just cited.

Yet it is in flagrant contradiction with Edwards' subsequent procedure and argument. Ramsey notes that Edwards "frequently lapses into saying the will is *determined* by these things" (apparent

good or preponderant inclination) (p. 46). Such "lapses" are frequent indeed. But the main issue is not their frequency but their importance for the structure of Edwards' argument. At the close of the very chapter in which he says that in propriety of speech motive, in the sense assigned, does *not* determine the will since, as preponderant inclination, it is not "perfectly distinct" from willing itself, he sums up his thesis by saying that "the will is always determined by the strongest motive, or by that view of the mind which has the greatest degree of previous tendency to excite volition" and tells us that this "carries much of its own evidence with it, and is the thing of chief importance to the purpose of the ensuing discourse" (p. 148) as indeed it is. And in his assault on the Arminians he regularly recurs to this position. Thus he holds that acts of will are necessary "with a necessity of consequence and connection; because every act of the will is in some way connected with the understanding, and is as the greatest apparent good is, in the manner that has already been explained" (p. 217). And this is supported by a restatement of the previous *reductio ad absurdum*—to say otherwise would be to say that "they don't choose what they prefer. Which brings the matter to a contradiction" (*ibid.*).

The truth appears to be that the "certain connection between motives and volitions" which is the core of Edwards' case for the moral necessity of volitions reduces on analysis to the irrefutable insight that men choose what they choose or prefer what they prefer. To describe this situation as the necessary determination of the will by the strongest motive is not merely improper; it is absurd. For, in Edwards' analysis, the will simply *is* the strongest motive, or preponderant inclination of the mind. We may go on, if we choose, to ask what causes one "inclination of the mind" to be stronger than another. Edwards gives some rather desultory consideration to this question, but has nothing at all conclusive to say about it. The essential point is, however, that the causation *of* such "motives" (whatever that may mean) is not a causation of acts of will *by* motives, and it was in this latter connection that the necessary determination of the will was said to consist. The account given has not demonstrated the "necessity" of this "connection"; it has rendered further talk of it absurd.

Why then does Edwards continue to talk in this way? The answer to this question is not hard to find. Edwards is concerned not only with the determination of the will but with moral agency. As a moral agent a man must be capable of being influenced by inducements, warnings, and admonitions, and these are said to be the "motives" for man's willed behavior. Here it does seem to make sense to talk of man's actions as willed and to consider the motives that guide or influence them. What Edwards has to do is to assimilate being influenced (in this sense) by motives to being "determined" to acts of volition by antecedent causes. "And besides, if the acts of the will are excited by motives, those motives are the *causes* of those acts of the will: which makes the acts of the will necessary; as effects necessarily follow the efficiency of the cause" (p. 328). This establishes the familiar pattern and is held to be sufficient to confound the Arminians. That it is a pattern inconsistent with Edwards' own "strict" account of the relation (or identity) between strongest motive and act of will is inconvenient, but he does not allow this fact to stand in the way of his righteous purpose. "Moral inability" he will have, on one ground or another, and this is the way in which it is established. From the standpoint of his overall purpose and point of view, it is the passage in which he recognizes that, on his theory, motive and volition are "not perfectly distinct" and that there is in consequence no room for an act of willing determined or "influenced" by such motives, that must be regarded as a "lapse" into a clarity he is unable or unwilling elsewhere to maintain.

A further confusion arises from his eagerness to square his conclusions with the language of the vulgar and the moral common sense of mankind. In this vein he takes pains to insist that when he writes of moral necessity and inability, he is using these terms in a special and philosophical sense and that it is only by a confusion of thought that the unappetizing conclusions are drawn from them that have alarmed the Arminians. The climax of this comes in a Letter to the Reverend John Erskine, which Ramsey has helpfully included in this edition of the *Enquiry*. "Nothing that I maintain, supposes that men are at all hindered by any fatal necessity, from doing, and even willing and choosing as they please, with full freedom; yea, with the highest degree of liberty

that ever was thought of, or that ever could possibly enter into the heart of any man to conceive" (p. 457). This borders on the disingenuous. For while Edwards is quite correct in saying that, on his theory, no fatal necessity hinders men from *doing* as they please—this being the liberty of voluntary action he has previously insisted on—to say that they can will as they please is only to say (a) that their willing *is* their pleasing and (b) that what they are pleased to do they obviously *can* be pleased to do, since what is actual is possible. And to say that *this* is the highest degree of liberty that was ever thought of is to deny that freedom of self-determination was ever thought of, on the ground, presumably, that since it is, on Edwards' showing, an incoherent notion, it has never really been conceived. Here, I think, the "polemic divine" has got the better of the philosopher in Edwards. But such an outburst does less than justice to the central intent and import of his theory.

A more interesting question is why, since Edwards holds that the use of such terms as "necessity" and "inability" as applied to moral action is misleading, he nonetheless continues to use them. The answer is that he needs them in his business, which is to bridge the gap between moral judgment and Calvinist theology with a philosophy that will translate the self-direction of the moral agent into the necessity with which "moral" (that is, mental) effects follow from their causes and this into the moral inability of the agent to will anything but what, under the "sovereignty" of such causes, he does necessarily will. There is, in the doctrine of total depravity, no other inability, and in the perseverance of the saints no other "necessity" than this. But this is quite enough to serve the purpose. And it is through this pattern of philosophical interpretation, in which these concepts have a crucial place, that this purpose has been achieved.

We return, then, to the central pattern of Edwards' account of the determination of the will. To will is to perform an act of volition, which is a mental occurrence of choosing, preferring, or liking better. Such events are effects which must have causes. Their causes, the previous mental events that move the mind to volition, are called motives. These prior events have causes over which the volitions, which are their effects, have no control.

For the act of volition does not choose its causes; until they have produced it, it does not exist as a choosing of anything. What it "chooses" is the voluntary act which is *its* effect, and to say that it chooses it is to say that it is the choosing or preferring which causes the action (for example, the movement of legs and feet) to occur. In these voluntary actions a man is free, since in them he does what pleases him, or as he pleases, and is properly praised or blamed for his actions, since his will is in them—that is, they are the effects of acts of will. This is the only freedom required for moral agency and it is not only compatible with the necessary determination of the will but is a consequence of such determination. For a moral agent is a man who has a capacity "of being influenced in his actions by moral inducements or motives, exhibited to the view of the understanding and reason, to engage to a conduct agreeable to the moral faculty" (p. 165). And to be "influenced by moral inducements" is to be caused to prefer or like better by antecedent mental causes from which the preference, as an effect, necessarily follows. This causation *is* the determination of the will and there is no place in it for indetermination or self-direction. Freedom of action consequent on such volitions we sometimes have, but freedom of the will is a confused and wholly indefensible notion to which, given this pattern of description, no sensible meaning can be assigned.

This conceptual machinery, which Edwards has constructed with elaborate skill, is sufficient to destroy the Arminians, and that is its primary purpose. There is no possible place here for any "indifference" or "indetermination" of the will. For an act of volition just is a preference or bias, and cannot be other than just the preference that it is. "Choice and preference can no more be in a state of indifference, than motion can be in a state of rest, or than the preponderation of the scale of a balance can be in a state of equilibrium" (p. 207). Nor could it conceivably be self-determined. To suppose it to determine itself is to suppose it to cause itself, to be prior in nature to itself, and distinct from itself. And to claim that it is caused by previous acts of will is to place an act of willing before every act of willing, "even the first," which is absurd. Finally, to speak of the will as influenced by motives and to call its response to such "influences" a kind of

self-determination is to surrender the case for "liberty of will" altogether. "For if motives operate by giving the mind an inclination, then they operate by destroying the mind's indifference, and laying it under a bias. But to do this, is to destroy the Arminian freedom: it is not to leave the will to its own self-determination, but to bring it into subjection to the power of something extrinsic, which operates upon it, sways and determines it, previous to its own determination" (p. 328). Since moral praise and blame assume that the will *is* influenced in this way, they suppose the very kind of "subjection to the power of something extrinsic" that the defenders of free will want to deny and Edwards to affirm. Here again, and at the very core of the argument, "it is not of him that willeth." And Calvinism affirms no other moral inability than that implied in this subjection. Q.E.D., and likewise Amen. The philosopher-theologian has done his work.

But it is no less clear, though perhaps less obvious, that in the process of destroying his opponents' doctrines, Edwards has also destroyed his own. For the "determination of the will" that makes nonsense of the Arminian heresies he demolishes makes equal nonsense of the "moral agency" he defends, and must defend, if his claim that moral judgments are properly applicable to human conduct is to be maintained. "The brute creatures are not moral agents: the actions of some of 'em are very profitable and pleasant; others are very hurtful: yet, seeing they have no moral faculty, or sense of desert, and don't act from choice guided by understanding, or with a capacity of reasoning and reflecting, but only from instinct, and are not capable of being influenced by moral inducements, their actions are not properly sinful or virtuous; nor are they properly the subjects of any such moral treatment for what they do, as moral agents are for their faults or good deeds" (p. 165). To show that moral agents *are* properly "the subjects of moral treatment," which for Edwards means primarily eternal punishment or reward, is the whole point of the *Enquiry*. This he cannot and will not surrender.

Now, given his account of the determination of the will, what is it for the will to be "influenced by moral inducements"? Such inducements must operate as motives, or as previous mental causes, if they are at all to move the will. For to move the will

is to cause the occurrence of an act of volition. How this happens we have already seen in a passage directed against the Arminians but precisely applicable to Edwards' own account. For motives to "influence the will" is for them "to bring it into subjection to the power of something extrinsic, which operates upon it, sways and determines it, previous to its own determination." A good motive (a "virtuous" inclination) may be stronger than a wicked one and as such capable of "moving" the will. With this the act of willing has nothing to do, for the strength of such inclination is determined *previous to its own determination* by causes which, since it did not exist to "determine" them, it could not possibly control. And to suppose it previously determined by antecedent acts of choice, or of will, is for Edwards an absurdity. Once the motive, whether good or evil, is strong enough, the act of willing necessarily occurs. The agent cannot choose but choose and, as an occurrence, the choosing, preference or bias cannot but be what it is. To say that "reason" or "understanding" has entered into its determination is only to say that past events of thinking something to be the case are among the antecedent causes of its occurrence as a choice. And once the choice, with its own determined moral character as good or evil, has occurred, the moral character of the ensuing voluntary act is inevitably fixed. A man is morally unable to do *voluntarily* any acts but those it pleases him to do. A man with a bad will cannot choose but act badly if he acts voluntarily, for his bad willing *is* his choosing, and it is for his voluntary acts, as the expression of an evil will, that he is justly to be blamed. That is all there is to moral blameworthiness—"a person's being or doing wrong, with his own will and pleasure; containing these two things: 1. His doing wrong, when he does as he pleases. 2. His pleasure's being wrong. . . . And this is the sum total of the matter" (p. 357).

When "being influenced by moral inducements" is thus specified it is plain that there is no room in it for any agency of the self in the determination of the moral character of its actions, while it is for this and this only that the agent is morally praised or blamed. What this character must be is determined previous to the occurrence of the act of will itself by the nature of the inducements that move it, and it does not choose its motives. There is

nothing for the act of choosing to do, when it does occur, but just to be the preferring or liking better that it cannot choose but be and, as such, the cause of voluntary actions which owe their moral character to this antecedent determination. Once a motive has become the strongest—and it is not by choice that this is done—the act of volition functions only as a piece of superfluous mental machinery that registers this result and somehow passes it on to ensuing bodily movements. As such machinery it is both otiose and undiscoverable, as Ryle has well shown in *The Concept of Mind*. As moral agency it is preposterous. For what is moral in it is beyond the power of the self, as choosing or willing agent, to direct, alter, or control. The "act of will" is not a voluntary act and the ensuing voluntary act is moral only as the effect of a previous "act" that the agent was morally unable to perform in any other way than as he did. Here "moral inability" amounts in fact to moral incapacity and the judgment of human conduct as moral, where such incapacity exists, is a manifest impertinence.

How did Edwards arrive at this incongruous position? The answer is, I think, that his account of the determination of the will is a systematic confusion of the language of mental causation with that of moral appraisal and justification. "The will" is not a causal concept and the question of how "volitions" operate as causal links in the machinery of bodily behavior is a spurious question, for no such volitions are to be found. That is why more up-to-date determinists have surrendered "acts of volition" and turned instead to a description of the "drives," "needs," and "stimuli" that are the currently respectable causes of "motivated" behavior. Such inquiries are, for the most part, uncomplicated by ethical considerations, and their findings often, though not always, provide useful information about the bodily conditions of human conduct. But in moral judgment we cannot get on without "the will," for it is on the character of a man as a person, as a willing, responsible agent, that such judgments are relevantly made. When we try to understand a man's actions in this way, we apply to them a different set of categories from those of mental causation; we ask for the "because" of his conduct in terms of the reasons that would show it, in the circumstances, to be sensible, appropriate, or morally right, and the agent a man who, assumed

to be capable of conducting himself in this way, in this instance has or has not failed to do so. It is to the agent as thus acting that the language of moral appraisal sensibly applies. Here it is not "the will" that performs acts of mental causation but the agent who acts willingly, responsibly, or by choice, acting in the role of a self or person and accountable as such for the rightness or wrongness of his conduct. "Acts of volition" are mental monsters, but "men of good (or evil) will" are moral facts in the world we know. To behave in such a way is what it is to *have* a will and where there is a will there is freedom of self-determination—not the preposterous freedom of self-caused volitions but the quite familiar freedom of that willed behavior in which a man acts as a self or person and can justly be asked to justify his conduct on moral grounds. The characteristic fallacy of determinism, and of Edwards' brand in particular, lies in its attempt to describe the "determination of the will" as such an exercise of moral agency by giving us an imagined account of the causation of "voluntary" acts either by acts of volition or by the prior appetites and drives which, in this account, do all the discoverable work of influencing behavior. The result is—not surprisingly—a disappearance not only of freedom of the will but of the will itself, and of man as a moral agent. For the kind of case in which the strength of antecedent inclinations could be accepted as an adequate account of the "why" of a man's behavior would be just that in which we should properly say that he had not willed at all and—if it were a case that called for the exercise of will—that he lacked the will power to direct and control his own conduct. This is in fact the model to which determinism, whether of the Calvinistic or "motivational research" variety, seems intent on reducing human conduct. For both alike the direction of men's actions is "not of him that willeth" but of an extrinsic power, God, an advertising agency, or the behavioral engineer, as the case may be. Edwards says that in cases of moral inability "nothing is wanting but a will" (p. 162). It might with equal justice be said that in his entire account a will is wanting, and that what takes its place, the causally necessitated "act of volition," is by no means an adequate or even an intelligible substitute for it.

That Edwards should have come to this result is not surprising.

His Calvinistic theology required it and Locke's philosophy provided the machinery by which, with some judicious emendations, reason could be reconciled with revelation. The outcome is illuminating not only as an intellectual exercise of great scope and ingenuity, but as a massive *reductio ad absurdum* of the still repeated claim that moral agency is reconcilable with a determinism that reduces the determination *of the will* to the causation of "volitions" (or appetites or inclinations) that cause "voluntary" action. The plain fact is that where such causation sufficiently accounts for human conduct there is no will to be determined, and where there is a will the categories of its "determination" are quite incongruous with those of "subjection" to extrinsic causes of the sort described. Where there is a will there is a person, and where there is a person there is the freedom of self-determination that is moral agency. A "determination of the will" that makes nonsense of moral agency makes nonsense also of moral judgments on men as persons, or as moral agents. If a study of Edwards' "Careful and Strict Enquiry" helps others, as it has helped this reviewer, to see that this is true, the book, in its new edition, will rank as a contribution not merely to early American but to contemporary philosophy.

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CRITICISM IN THE HISTORY OF SCIENCE: NEWTON ON ABSOLUTE SPACE, TIME, AND MOTION, II

V

WE ARE now within striking distance of Leibniz, whose objections to the idea of absolute space have so often been applauded as anticipating Einstein's theories. But before we turn to consider his attack, we must first widen our view. Up to now, I have deliberately confined my attention to Newton's dynamical practice, and to the functions which he allots his concepts of space and time in applying the theory to dynamical problems. This dynamical practice, however, contrasts sharply with the theological speculations of his disciples. Joseph Raphson, for instance, in his essay *On the Real Space or the Infinite Being* (1702), which has recently been analyzed by Koyré,[1] insists on the "real existence" of an immovable and immaterial entity, identifiable with Space. This entity he explicitly speaks of as a supposition or hypothesis; but it is a hypothetical being whose existence he regards as sufficiently proved, and in due course he will acclaim it as an aspect of the Deity:

> Thus from every motion (extended and corporeal) . . . follows necessarily an immovable and incorporeal extended. . . . The possibility of these motions demonstrates the hypothetical necessity of this immovable extended, and the reality of the physical motions, the absolute.[2]

What was it, then, that roused Berkeley and Leibniz to attack Newton? Not so much, it appears, the mathematical doctrines of the *Principia* as the theological doctrines which were subsequently read into it by Raphson and the like. Why else, one may ask, did the critics delay their attack for so long? The *Principia* appeared in 1687, but not until after the turn of the century

[1] Koyré, *From the Closed World to the Infinite Universe*, ch. viii, pp. 190-205.
[2] Koyré, p. 191.

did the storm really blow up. Koyré puts this down to the appearance of Raphson's essay:

> It is certainly Raphson's interpretation, or it would be better to say, Raphson's disclosure of the metaphysical background of Newtonianism, that Bishop Berkeley had in mind, when, in 1710, in his *Principles of Human Knowledge*, he not only made a vigorous attack upon its fundamental concepts, absolute space and absolute time, but also pointed out the great danger that they implied from the theological point of view.[3]

The more far-ranging and speculative Queries at the end of the *Opticks* (1704, with additions in 1706)[4] also had something to do with the attacks, and Leibniz singles out for criticism passages from these Queries.[5]

The suggestion that the contentious issues were theological, not dynamical, is borne out if one looks at the actual objections Leibniz advances. These are set out most fully in the last of his contributions to the Leibniz-Clarke correspondence.[6] The passage in question deserves close attention, for in it the crux of the dispute becomes clear, and the two central issues—physical and metaphysical—are carefully distinguished. To begin with, Leibniz concedes, there is undoubtedly a difference between an "absolute motion" of a body and a "mere relative change of its situation with respect to another body."[7] This he does not deny: all he rejects is "the supposition of a real absolute space,"[8] that is, the idea that anything follows from this dynamical distinction about the existence of a hypothetical entity, distinct from material things, called "Space." For the idea of such a being, he sees, apart from misrepresenting grossly our actual spatial conceptions,[9] would share an embarrassingly large number of attributes with the Deity and so be too easily confounded with God. This heresy

[3] Koyré, p. 221.

[4] See the Dover edition of the *Opticks* (New York, 1952), pp. 339-406.

[5] See *Leibniz-Clarke Correspondence*, ed. H. G. Alexander. Introduction, pp. xv-xx, for detailed references. (Referred to hereafter as *L-C.C.*).

[6] Leibniz, Fifth Paper, pars. 27-82, *L-C.C.*, pp. 63-82.

[7] Par. 53, *L-C.C.*, p. 74.

[8] Par. 52, *ibid.*

[9] Par. 47, *L-C.C.*, pp. 69-72.

may commend itself to More[10] and Raphson, but to Leibniz it is anathema,[11] and one more sign of the manner in which (as he puts it in his original onslaught) "Natural religion itself, seems to decay" under the influence of Mr. Locke and Sir Isaac Newton.[12]

To lead up to Leibniz's crucial paragraphs: in the first three exchanges Clarke and Leibniz have been only fencing, at least so far as concerns the question of absolute space. Then, in his fourth reply, taking up Leibniz's assertion that "To say that God can cause the whole universe to move forward in a right line . . . is another chimerical supposition,"[13] Clarke refers him to the initial scholium in the *Principia*. There, he says,

> from the consideration of the properties, causes, and effects of motion, [Newton] shows the difference between real motion, or a body's being carried from one part of space to another; and relative motion, which is merely a change of the order or situation of bodies with respect to each other.[14]

This is the argument which (he says) "is not to be answered, by barely asserting the contrary."

In his fifth paper, Leibniz devotes two paragraphs to this particular point of Clarke's;[15] but these need to be read in conjunction with the longer passage, a few pages earlier, where he gives a masterly analysis of the way in which "men come to form themselves the notion of space."[16] The whole passage is rather long to quote, and a few typical sentences are enough for our purpose.

> To give a kind of a definition: *place* is that, which we say is the same to A and to B, when the relation of the co-existence of B, with C, E, F, G, etc. agrees perfectly with the relation of the co-existence, which A had with the same C, E, F, G, etc. supposing there has been no cause of change in C, E, F, G, etc.[17] It may be said also . . . that *place* is that,

[10] "Methinks I see the revival of the odd imaginations of Dr. Henry More (otherwise a learned and well-meaning man) . . ."; par. 48, *L-C.C.*, p. 72.

[11] Pars. 36 ff., *L-C.C.*, pp. 66-67; also Fourth Paper, par. 10, p. 37.

[12] Leibniz's First Paper, *L-C.C.*, p. 11.

[13] Leibniz's Fourth Paper, *L-C.C.*, par. 13, p. 38.

[14] Clarke's Fourth Reply, par. 13, *L-C.C.*, p. 48.

[15] Leibniz's Fifth Paper, pars. 52-53, *L-C.C.*, pp. 73-74.

[16] Par. 47, *L-C.C.*, pp. 69-72.

[17] What curious scruple leads him to omit the letter D from his alphabet? Is it the fact that this is the initial letter of the word *Dieu*?

which is the same in different moments to different existent things, when their relations of co-existence with certain other existents, which are supposed to continue fixed from one of those moments to the other, agree entirely together. And *fixed existents* are those, in which there has been no cause of change of the order of their co-existence with others; or (which is the same thing,) in which there has been no motion. Lastly, *space* is that, which results from places taken together.[18]

This earlier definition throws light on the things Leibniz says, when he finally addresses himself to the question of Newton's scholium.

I find nothing in the Eighth Definition of the *Mathematical Principles of Nature*, nor in the Scholium belonging to it, that proves, or can prove, the reality of space in itself. However, I grant there is a difference between an absolute true motion[19] of a body, and a mere relative change of its situation with respect to another body. For when the immediate cause of the change is in the body, that body is truly in motion; and then the situation of other bodies, with respect to it, will be changed consequently, though the cause of that change be not in them. 'Tis true that, exactly speaking, there is not any one body, that is perfectly and entirely at rest; but we frame an abstract notion of rest, by considering the thing mathematically. Thus have I left nothing unanswered, of what has been alleged for the absolute reality of space.[20]

As to this latter question—of the "absolute reality of space"—if I am right, Newton is nowhere committed to a belief in anything like a hypothetical space-substance or -entity, at any rate in the *Principia*. If the question is to be raised at all plausibly about Newton's views, it must be in connection with his later, and less formal, writings, such as the Queries in the *Opticks* and the General Scholium added as an appendix to the second edition of the *Principia* in 1713.[21] (This edition, with its polemical preface by Roger Cotes,[22] was one of the immediate occasions for the final attack by Leibniz which is preserved for us in his correspondence with Clarke.)[23] The central problem faced in the disputed

[18] *L-C.C.*, pp. 69-70.

[19] Leibniz's phrase could be translated equally well as "a genuinely absolute movement," and this perhaps conveys his force better.

[20] Par. 53, *L-C.C.*, p. 74.

[21] *Princ.*, pp. 543-547 (ed. by F. Cajori).

[22] *Princ*, pp. xx-xxxiii.

[23] See *L-C.C.*, Introduction, p. x.

scholium is, as we have seen, not metaphysical but dynamical; it is, indeed, the first of the issues which Leibniz distinguishes, namely, the nature of the difference between a "mere relative change of situation" of one body with respect to another, and a "genuinely absolute movement." And what we must do, to gauge the comparative strength of Newton's and Leibniz's positions on this question, is to see how far each of the criteria they offer for recognizing an absolute movement will take us.

So long as we confine ourselves to familiar terrestrial happenings, Leibniz's account of the matter involves little difficulty. Suppose a squad of recruits to be exercising on a parade-ground: if all but one of the recruits take a pace forward, the resulting relative change of situation between them is the same as would have followed if the last recruit alone had taken a pace backwards. Yet we do characterize the cases differently, and would not allow that in both cases alike the last recruit had "moved"—for, in truth, in the first case he did nothing, but merely stood still. There was, in Leibniz's terminology, "no cause of change in him" and he remained for practical purposes "a fixed existent." Again, Einstein is reputed to have asked the ticket-collector on an express out of Paddington, "Does Oxford stop at this train?", and this question, too, strikes us as paradoxical for entirely Leibnizian reasons. No doubt there will be a "stop" at Oxford only if the train and Oxford station platform are brought to a relative state of rest. But this is not sufficient for us; the relative state of rest must be brought about by applying brakes to the train—the "cause of change" so being "in" the train, not the station. If, on the other hand, a mobile platform were set going alongside the express as it approached Oxford, by means of which passengers and luggage were taken up and set down—the train thundering along as before—we might then conclude, for all the relative state of rest between train and platform, that the train did not, properly speaking, "stop" at Oxford at all.

So far, so good; in everyday, terrestrial situations we can apply Leibniz's criterion easily enough. There is normally no doubt where the cause of any motion is acting, and the result of applying this test coincides for practical purposes with the results of using geographical standards. Even so, two things should be noticed

which throw doubt on the suggestion that Leibniz is here being a precursor of Einstein. First, there are the clear traces of Aristotelian doctrine, notably, echoes of the view that there can be no change without an agent of change, no motion without a mover.[24] (Leibniz takes it for granted that a change of relative situation will always have an active cause somewhere, and asks only *where* it is acting.) Second, he has shifted by the end of his account some way from his original, purely "relational" definition of place. The crucial tests now depend on our ability to identify "fixed existents," and the recipe for doing this is not stated in a "relational" way at all; a body is truly in motion, he says, if and only if "the immediate cause of change is in the body"[25]—and this must be determined (presumably) without bringing in further references to other bodies C, E, F, G, and so forth.

When we turn to the astronomical problems facing Newton in the *Principia*, the graver limitations of Leibniz's account begin to appear. Newton's own discussion of the same topic appears at first sight to differ little from that of Leibniz:

> The causes by which true and relative motions are distinguished, one from the other, are the forces impressed upon bodies to generate motion. True motion is neither generated nor altered, but by some force impressed upon the body moved; but relative motion may be generated or altered without any force impressed upon the body. . . .[26]

Yet the differences there are between the two accounts, though slight, are crucial. Newton speaks of "force impressed upon" a body, Leibniz of a "cause of change" in it. In terrestrial dynamics these two phrases may come to exactly the same thing, but what are we to make of them in planetary dynamics? Here the discovery of gravitation created a problem for Leibniz. He would have been in no doubt that the planets genuinely moved in traversing their

[24] Leibniz renounced the authority of Aristotle in physics, but in his logic and metaphysics he never emancipated himself from the Aristotelian tradition. The older subject-predicate analysis remained the basis of his thought, substances (named by subjects) having a "reality" denied to attributes or relations (expressed by predicates). Nor did he succeed, as is well known, in separating clearly his mathematical from his theological interests; see P. P. Wiener's Introduction to Leibniz, *Selections* (1953).

[25] Par. 53, *L-C.C.*, p. 74.

[26] *Princ.*, p. 10.

elliptical orbits, and might have allowed also that the Sun moved by reaction; yet wherein was "located" the cause of these motions? Is the cause of the changes "in" the Sun, or "in" the planets, or "in" the intervening region? The question was at the time obscure, and by now it scarcely admits of an answer.[27] It was clear enough that a reciprocal force was acting on both Sun and planets, but this was hardly in the nature of a "cause" having a definite and precise location.[28] Leibniz in fact reacted violently against any hint of action-at-a-distance, insisting that the cause of the planetary deviations must be "in" the planets and that of the Sun's reaction "in" the Sun, and both Clarke and Newton would probably have agreed to this in principle.[29] Yet to take a stand on this principle alone was the sheerest a-priorism on Leibniz's part: the existence of gravitational forces could be

[27] It raises at once the whole tangled problem of "action at a distance." On this see the paper by Mary B. Hesse, in *Isis*, XLVI (1955), 337-353.

[28] Leibniz is of course unable to face the problem directly, since he is committed to rejecting the whole idea of universal gravitation, which he persists in identifying with the doctrine of action-at-a-distance. He return to the question repeatedly in his controversy with Clarke, raising it first in a provocative manner in his Third Paper, par. 17 (*L-C.C.*, p. 30): "And therefore I maintain, that the attraction of bodies, properly so called, is a miraculous thing." He returns to it, taking up Clarke's successive replies, in Paper 4, par. 45, p. 43, and Paper 5, par. 118, p. 94; but the most trenchant statement of his position is to be found in Paper 5, par. 35, p. 66, where he writes: "It is a strange imagination to make all matter gravitate, and that towards all other matter, as if each body did equally attract every other body according to their masses and distances. . . . A body is never moved naturally, except by another body which touches it and pushes it; after that it continues until it is prevented by another body which touches it. Any other kind of operation on bodies is either miraculous or imaginary." The doctrine that dynamical interaction can take place by impact only is for him an axiom a priori, and he is not prepared to countenance Newtonian gravitation unless and until a fully mechanistic theory of its mode of operation is established: till then it is for him a "miracle."

[29] Leibniz's Fifth Paper, par. 118, *L-C.C.*, p. 94: cf. Clarke, in his Fourth Reply, par. 45, p. 53: "That one body should attract another without any intermediate means, is indeed not a miracle, but a contradiction, for 'tis supposing something to act where it is not." And Newton, in his Third Letter to Bentley (Feb. 25, 1692/3): "It is inconceivable that inanimate brute matter should, without the mediation of something else which is not material, operate upon and affect other matter without mutual contact, as it must be if gravitation, in the sense of Epicurus, be essential and inherent in it. And this is one reason why I desired you would not ascribe innate gravity to me."

established without the nature or localization of the "causes" involved being known,[30] and Newton did better to leave as an entirely open question the mechanism by which gravitational attraction might be shown to operate.[31]

In the field of planetary dynamics, therefore, Leibniz's account of "genuinely absolute movement" ceases to be of any help to us. Further tests are required if we are to be in a position to apply this distinction in all cases. Newton next addresses himself to the task of providing these tests,[32] though he has to admit both that the task is a difficult one ("It is indeed a matter of great difficulty to discover, and effectually to distinguish, the true motions of particular bodies from the apparent. . . . Yet the thing is not altogether desperate . . ."),[33] and that a complete account can be given only in terms of the theory to which this scholium is a mere introduction:

> How we are to obtain the true motions from their causes, effects, and apparent differences, and *vice versa*, how from their motions either true or apparent, we may come to the knowledge of their causes and effects, shall be explained more at large in the following treatise. For to this end it was that I composed it.[34]

In the event, he is able—as is well-known, indeed notorious—to provide a genuinely dynamical criterion only in the case of rotation and acceleration. Beyond that, any choice of one set of reference-objects rather than another is, by dynamical standards, arbitrary, and we can do nothing but fall back on general agreement—as he does—in conferring a preferential status on one among the unlimited number of possible inertial frames. Newton is clear in his mind about this only up to a point: "The motions of bodies included in a given space are the same among themselves,

[30] As Clarke insists in his final reply to Leibniz, pars. 118-123, *L-C.C.*, p. 118: "That this phenomenon is not produced *sans moyen* . . . is undoubtedly true. . . But if [philosophers] cannot discover the cause; is therefore the effect itself, the phenomenon, or the matter of fact discovered by experience . . . ever the less true?"

[31] "Hitherto I have not been able to discover the causes of those properties of gravitation from phenomena, and I frame no hypotheses." *Princ.*, p. 547.

[32] *Princ.*, pp. 10-12.

[33] *Princ.*, p. 12.

[34] *Loc. cit.*

whether that space is at rest, or moves uniformly forwards in a right line without any circular motion,"[35] and "The centre of the system of the world [the planetary system] is immovable. This is acknowledge by all (*Hoc ab omnibus concessum est*). . . ."[36] Yet he does continue to talk, just like Leibniz, as though the notion of "absolute rest" had a meaning, and might be recognized dynamically, from the fact that "bodies really at rest do rest in respect of one another."[37] So far as this goes, there is not much to choose between the two of them. Leibniz's system is quite as dependent as Newton's on the possibility of identifying "fixed existents," even if only as a mathematical ideal.[38] At any rate, Corollary V to the Laws of Motion effectively cancels out all Newton's hints about "absolute rest" before the dynamical theory itself has got under way, and so saves him in practice from serious paradox; and in the end we are left in Newton's account with nothing to show for the phrase but the offhand remarks which led Neumann[39] to invent his famous "Body Alpha":

> And therefore as it is possible, that in the remote regions of the fixed stars, or perhaps far beyond them, there may be some body absolutely at rest; but impossible to know, from the position of bodies to one another in our regions, whether any of these do keep the same position to that remote body; it follows that absolute rest cannot be determined from the position of bodies in our regions.[40]

How far, to return to our question, can it fairly be said that Leibniz's objections to Newton's absolute space foreshadowed Einstein's, or that he detected in Newton's dynamical theories defects which Einstein was later to correct? And how far was Leibniz's own theory a "relativistic" one, in the twentieth-century sense of the word? Certainly Leibniz's account of the meaning of spatial terms has this in common with Einstein's, that he rejects

[35] Corollary V to the Laws of Motion: *Princ.*, p. 20.

[36] Book III, Hypothesis I, *Princ.*, p. 419. In the first edition, this had been Hypothesis IV (p. 402): on this point, see the most illuminating discussion in I. B. Cohen, *Franklin and Newton*, pp. 127-132, and the illustration facing p. 130.

[37] *Princ.*, p. 8.

[38] *L-C.C.*, p. 74.

[39] See note 63 above (in Part I, *Philosophical Review*, LXVII, 1959, 23).

[40] *Princ.*, pp. 8-9.

all suggestion of a space-substance distinct from normal matter[41]—if one can talk of "normal matter" in relation to the science of 1700[42]—as emphatically as Einstein later rejected Lorentz's use of the notion of the ether.[43] Beyond that there is little resemblance. Despite the severely relativistic tone in which Leibniz begins his account of place, space, and motion, he introduces qualifications en route which land him in a final position less relativistic than Newton's; implying that one can identify dynamically, even "in our regions," not only absolute acceleration and rotation but also (at any rate approximately) absolute velocity and absolute rest. And this belief of Leibniz's surely places him at the opposite pole from Einstein, for whom it was an axiom that no dynamical meaning could attach to any sort of spatial magnitude except in relation to an arbitrarily-chosen set of reference-bodies.

In return, there is reason to think that Leibniz would have found some features of relativity theory little to his taste—especially in its "general" form. For he always insisted on keeping a sharp and rigorous distinction between material things (which were substantial) and space (which was no substance, but a mere abstraction—"places taken together").[44] The whole direction of relativistic thought, by contrast, from Riemann[45] through Clifford[46] to Einstein, has been toward making matter itself the epiphenomenon, whose appearance is to be accounted for as a consequence of modifications in the "metric"—or, more picturesquely still, in a reified space-time which is thought of as filling, if not indeed as *being*, the Universe. In either form, the theory would have offended against Leibniz's deepest metaphysical susceptibilities.

As for the suggestion that Leibniz recognized the defects in

[41] See, for instance, Leibniz's Third Paper, par. 4, *L-C.C.*, p. 25.

[42] This was of course the generation of Stahl, and there is some evidence that Leibniz was influenced by van Helmont. The history of the term "substance," which developed from being a term of logic and metaphysics to being the equivalent of "material stuff," needs examination.

[43] Cf. the discussion in Jammer, *Concepts of Space*, ch. 5.

[44] Leibniz's Fifth Paper, par. 47, *L-C.C.*, p. 70.

[45] Jammer, *op. cit.*, pp. 149-160.

[46] W. K. Clifford, "On the Space-Theory of Matter," *Proc. Camb. Phil. Soc.* (1876); and *The Common-Sense of the Exact Sciences*, London, 1885.

Newton's theory which Einstein was later to exploit and circumvent: this can be maintained only if one treats the theological views of a Raphson or a More as an integral part of the Newtonian theory. Huygens may perhaps be said to have foreshadowed Einstein, in conceiving the ambition to free dynamics from its dependence on the use of inertial frames.[47] But Leibniz's arguments do not touch Newton's dynamics, and strike home only against its theological superstructure. For scholars like Koyré, who regard Newton's ideas as a systematic whole in which theological views like Henry More's are indissolubly wedded to the dynamical theory, that is enough: in their eyes, Leibniz is not so much chipping the superstructure of Newton's theory as sapping its foundations.[48] Yet later generations of scientists have had little difficulty in detaching the mathematical physics from the metaphysical theology; and if one keeps in mind the specific problems in planetary dynamics which were in the forefront of Newton's mind when he composed the *Principia*, there is little in the scholium to the eighth definition—or so I have tried to show—that cannot be given a dynamical rather than a metaphysical or theological interpretation. This being so, Leibniz's criticisms seem to fall wide of their mark. He may have succeeded in showing the heterodoxy of post-Newtonian natural theology but the notion of "absolute, mathematical space," dynamically understood, remains unscarred. And perhaps this was all that Leibniz really cared about, having set himself in the first place to establish for Princess Caroline not the scientific inadequacy of Newtonian dynamics but rather the decayed condition of natural religion in England.[49]

VI

So far I have deliberately been putting forward an advocate's case, from which many qualifications and cautions have been omitted. I have done so in order to redress a balance: recent

[47] Jammer quotes and discusses a recently-discovered paper of Huygens, in which he tries to get round the apparent "absoluteness" of rotational motion. See *op. cit.*, pp. 122-123.

[48] This is the whole argument of Koyré, *op. cit.*

[49] Cf. the terms in which his attack in the First Paper (*L-C.C.*, pp. 11-12) are couched.

studies of Newton have concerned themselves so much with the supposed metaphysical and theological content of his ideas that his fundamentally scientific purpose has almost come to be forgotten. Yet if you only keep in view the dynamical problems Newton was tackling in the *Principia*, and the novel, axiomatic form in which his theory was cast, you will hardly need to give his ideas about absolute space and time a theological or metaphysical interpretation; and certainly nothing in his scholium on the subject commits him to any recondite belief that Space is a Spirit or Substance of an immaterial and possibly Divine character. Nor do such doctrines have any organic place in the structure of his dynamical theory, which stands perfectly well without them. The distinction between absolute, mathematical and relative, sensible space, time, and motion can be interpreted consistently as a logical rather than a metaphysical distinction, and the theory as a whole justified on purely dynamical grounds. Of course Newton did not regard his mathematical ideas as *mere* abstractions, but saw in their dynamical fruitfulness evidence of the order of Nature.[50] Since, however, the *Principia* was put forward as an exercise in "mathematical and experimental philosophy"[51]—that is, as natural science—it is our duty, *even as historians*, to place this interpretation on it, and to add metaphysical or theological glosses only where we have first shown past question that there is no scientific point which Newton can be understood as making.

In all this, I have been following Einstein's wise maxim, that "If you want to find out anything from the theoretical physicists about the methods they use, I advise you to stick closely to one principle: don't listen to their words, fix your attention on their deeds."[52] Yet the question can be asked how far Newton was

[50] Rightly so, for the possibility of applying abstractions as we do to explain the phenomena of Nature undoubtedly tells us something about the world: cf. L. Wittgenstein, *Tractatus Logico-Philosophicus* (1921), Propn. 6.342, pp. 174-177. See also E. W. Strong, *loc. cit.*

[51] Newton's own phrase. The force of the phrase is made clear by his remarks in the abstract of the *Principia* known as "Newton's System of the World" and published as an appendix in Cajori's edition; esp. *Princ.*, pp. 550-551.

[52] See A. Einstein, *On the Method of Theoretical Physics* (Herbert Spencer Lecture), Oxford, 1933.

himself clear what he was doing when he made these distinctions and framed these notions. Let it be granted that his idea of absolute space can be given a respectable—and purely dynamical—reading, was this entirely the way in which Newton himself understood it? Or would he have missed from our reading features of the notion which were important for him? At this point, the qualifications omitted up to now become relevant, and it will be unwise to claim too much. For there are indeed some hints that Newton personally saw—or came in time to see—more in the notion of space than our analysis has revealed, and that he would in fact have felt that our account omitted something important. Yet one does have to say "personally" rather than "as a scientist," since he could go further only if he either misunderstood the character of the distinction between "mathematical" and "sensible" space, or was here extending the limits of mathematical and experimental philosophy.

There is, as we shall see, some evidence that he did both; but I do not think one should exaggerate its strength. Too much weight should not be placed on echoes of Henry More, nor need one be in a hurry to credit Newton himself with all the theological views of his followers. Every novel scientific theory attracts a fringe of popularizers who hasten to explain to the public "wider implications" of the theory which its own author might hesitate to endorse—and hesitate out of a rational prudence, not from secretiveness. There appears to be little more than inference to support the belief that Newton saw and approved either Raphson's essay[53] or even Clarke's more sober replies to Leibniz,[54] and more

[53] The only evidence about a connection mentioned by Koyré is negative: viz., that the additional queries in the Latin edition of the *Opticks* (1706) cannot have been prompted by Raphson's essay. Yet if there had been any positive evidence that Newton knew Raphson's work, Koyré would surely have cited it, since it would be strong support for his thesis. But can we not at any rate place *some* confidence in the reliability of Raphson as evidence of Newton's opinions? As to this, it is at least clear that Raphson held sadly confused views about the theory of fluxions: cf. F. Cajori, *A History of the Conceptions of Limits and Fluxions in Great Britain from Newton to Woodhouse*, Chicago and London, 1919, p. 43. (I am grateful to Dr. J. R. Ravetz for this last reference.)

[54] There is in this case some reasonable evidence of a possible connection: Princess Caroline says in a letter to Leibniz enclosing Clarke's Second Reply

solid evidence is needed than has yet been produced of his actual relations with the Cambridge Platonists.[55]

Newton's letters to Bentley stand in this respect virtually alone.[56] They contain plenty of references to the Almighty, but these are all concerned with evidences of Contrivance and Design, and Space is not mentioned. He does say, it is true, that "There is another argument for a Deity" which he thinks it more advisable for the time being to let sleep;[57] and this *may* be Raphson's argument, for the letter in question antedates Raphson's essay by ten years. But the authoritative abstract of his doctrines, Henry Pemberton's *A View of Sir Isaac Newton's Philosophy*,[58] says nothing about absolute space, and does not hint that in this quarter might be found solid arguments "as might work with considering men for the belief of a Deity."[59] The

(10th Jan. 1716) that this reply and its predecessor "are not written without the advice of Chev. Newton, whom I should like to be reconciled with you" (*L-C.C.*, p. 193). But the extent of Newton's contribution is unclear, and it cannot be said with any certainty that he gave his personal approval to the papers as sent. On the contrary, Clarke in at least one place put forward an idiosyncratic doctrine of which his latest Editor can say: "there is no evidence that it was held by anyone else on the Newtonian side." See *L-C.C.*, Introduction, p. xxviii.

[55] In this case, the evidence for a connection is really slight. Koyré relies on an argument from silence: "The metaphysical pronouncements of Newton are not very numerous and . . . are rather reticent and reserved. And yet they are sufficiently clear so as not to be misunderstood by his contemporaries" (p. 160); and "Newton, as far as I know, never quoted More; nor did he make an explicit reference to his teachings. Yet the relations between the theories of the two Cambridge men could not, of course, escape their contemporaries" (p. 190). In this latter passage, the word "relations" is ambiguous: does Koyré mean that their contemporaries saw resemblances—possibly superficial—between their theories, or that there was a positive influence of More on Newton which was common knowledge at the time? If the latter, which is implied in his subsequent argument, one looks for evidence in the form of contemporary statements; and these are not forthcoming.

[56] These letters date from 1692-1693, and are printed in *Opera Omnia*, Vol. IV, pp. 429-442.

[57] Last paragraph of the first letter, dated 10th Dec. 1692.

[58] London, 1728.

[59] This famous phrase appears at the beginning of the first letter to Bentley, and has been made to carry a lot of weight. Clearly Newton was a devout man, and strongly impressed by the Argument from Design (Cf. the MSS. reprinted in Brewster's *Memoirs*, Edinburgh, 1850, Vol. II, pp. 347-348 and 354); but nothing follows about Newton's views on Space. (Cf. Alexander, in *L-C.C.*, Introduction, p. xl.)

burden of proof that Newton was not only influenced by More and influenced Raphson but was entirely of their opinion remains accordingly undischarged. Maybe it was so, but there is little in his writings to prove it.

This said, we must put in the necessary qualifications. They are of four kinds. First, there is evidence even in the disputed scholium that Newton did not appreciate with complete clarity the function within his own theory of the distinction between "mathematical" and "common" space, time, and motion. Second, there is his practice of arguing about "space" in a unitary manner, without explicitly distinguishing acceleration and rotation from position and velocity, as the structure of his theory properly requires. Third, there are his much-discussed remarks in the Queries after the *Opticks* and in the *General Scholium*—though these all date from at least fifteen years after the *Principia*, and so presumably from thirty years after the first conception of his dynamical theory.[60] Finally, there are reports by his colleagues and acquaintances, notably Gregory. These we must take in order.

(i) If Newton had seen clearly the logical character of the distinction between absolute and relative space, he would at certain points in the scholium have expressed himself differently. This is important not so much in the passages already quoted, where he puts in a cautionary "as it were,"[61] as in other passages were he writes, significantly, in the material mode ("S is/is not in fact P") things which could have been expressed less misleadingly in the formal mode ("It makes sense/no sense to speak of S as being P").

A simple instance of this appears in the very statement of the first distinction:[62] "Absolute, true, and mathematical time flows equably . . ."—which can be read less concisely but more explicitly as saying: no question can meaningfully arise about the degree of accuracy or inaccuracy of mathematical time, such as

[60] Accepting Newton's own statement that he had mastered the chief problems dealt with in the *Principia* during his retreat to Woolsthorpe in the plague years 1665-1666.

[61] "Times and spaces are, as it were, the places as well of themselves as of all other things" (*Princ.*, p. 8), and ". . . who in infinite Space, as it were in his Sensory. . ." (*Opticks*, Query 28, *ad fin.*), etc.

[62] *Princ.*, p. 6.

always makes sense of any "measure of duration by the means of motion." In this case, the compression probably does no harm, but the same thing leads to a misleading obscurity when Newton turns, further on, to explain why we have to use dynamical tests to distinguish true from apparent, absolute from relative, motion:

> But because the parts of space cannot be seen, or distinguished from one another by our senses, therefore in their stead we use sensible measures of them. For from the positions and distances of things from any body considered as immovable, we define all places; and then with respect to such places, we estimate all motions . . . in common affairs: but in philosophical disquisitions we ought to abstract from what are only sensible measures of them.[63]

How are we to take this? The language suggests that there has been a choice and that Newton is telling us which way the choice fell and why: we have regretfully had to adopt sensible measures of spatial magnitudes instead of working directly in terms of true absolute spaces themselves, but we have done so only as a second-best, on account of the unfortunate fact that the parts of "space itself" are unobservable. This suggestion (and it is no more than that) is entirely misleading, since there is no room in the Newtonian theory for this choice, but only for a different one. No occasion can arise for a choice whether, in dynamics, to make our measurements relative to "true space" or to "sensible measures of space": the only genuine choice is between different sensible measures. Correspondingly, the "unobservability" of absolute space is not a fact of nature (regrettable or otherwise), but a logical feature of any purely mathematical conception of space. We do not have to put up with sensible measures *faute de mieux*; rather, our task is to identify which of the available measures of spatial magnitudes most nearly realize our dynamical ideals.

From the suggestions implicit in this passage, it seems possible, therefore, that Newton had not thought out fully the implications of his distinction between mathematical and sensible space. Though in applying his theory he can make a consistent use of the phrase "the true motions of a body" to mean "the motions of a body, referred to a frame perfectly realising our dynamical

[63] *Princ.*, p. 8.

ideals," he does seem to have been operating even at this stage with a different picture—that of "real places" existing somehow alongside material things:

> Wherefore, entire and absolute motions can be no otherwise determined than by immovable places; and for that reason I did before refer those absolute motions to immovable places, but relative ones to movable places. Now no other places are immovable but those that, from infinity to infinity, do all retain the same given position one to another; and upon this account must ever remain unmoved; and do thereby constitute what I call immovable space.[64]

This is the passage which, more than any other that Newton wrote on this topic either in the *Principia* or indeed before 1700, resists transcription into the formal mode. Logically speaking, the picture of immovable places forever retaining the same given position one to another from infinity to infinity may be quite inessential to Newtonian dynamics; nevertheless, this seems to have been the image in terms of which Newton himself from the beginning *visualized* absolute space.

(ii) In using the omnibus-term "space," Newton again suggests that there is a unique "absolute" frame of reference, relative to which one can consider all spatial magnitudes on a level; so that what goes for acceleration will go equally for rotation, velocity, and position. But this is not so. Corollary V to the Laws of Motion allows that all frames of reference moving uniformly relative to one another are dynamically equivalent,[65] that is, that the "forces, causes and effects" accounting for motions relative to any of these frames will be identical in every case; only where two frames are accelerating or rotating relative to one another must we invoke different forces (centrifugal or impressed) to explain the motions of a body relative to either frame. The ideal of "absolute rest," which Newton shares with Leibniz, is one to which no dynamical meaning can be given, and the selection of one out of the unlimited number of equivalent inertial frames to define "absolute position" is by dynamical standards an arbitrary choice.

[64] *Princ.*, p. 9.
[65] *Princ.*, p. 20.

Newton, however, was not alone in confounding questions about rotation and acceleration with questions about velocity and position. Up to this day, discussions about space have been carried on in an over-general manner, as though the same logical and philosophical considerations could safely be applied to spatial concepts of all kinds; and this despite the fact that Corollary V of Newton's theory implicitly distinguishes between the two pairs of concepts. Perhaps Newton might have seen more clearly the force of the distinction if it had not been for his picture of "immovable places" forever retaining their relative positions from infinity to infinity. Even so there is little evidence that his motives for accepting the idea of "absolute rest" were theological ones; the notion was in fact so much part of the dynamical tradition up to and including Galileo[66] that it would have been a stroke of genius in itself to have eliminated it from his theory. What one *can* say is that this point in his exposition was one around which metaphysical or theological accretions might naturally tend in time to form.

(iii) The most solid evidence that Newton came to have "a general concept of space, which was in part the result of his theological convictions,"[67] is to be found in his later writings, notably in the General Scholium added to the second edition of the *Principia* in 1713, twenty-six years after its first appearance. This Scholium is written in a style quite unlike that of the main treatise. By now the theological echoes are reverberating loudly, and Newton is insisting (in a famous sentence added to the scholium as the second edition was going through the press) that natural theology and natural science cannot be separated:

> And thus much concerning God; to discourse of whom from the appearance of things, does certainly belong to Natural Philosophy.[68]

Even now, however, Newton is careful not to identify Space with the Deity, but to make the former dependent on the latter:

> He is not eternity or infinity, but eternal and infinite; he is not

[66] See, for instance, Ernest A. Moody, "Galileo and Avempace," *J. Hist. Ideas*, XII (1951), 375-422, reprinted in *Roots of Scientific Thought* (1957), esp. pp. 182-183.

[67] I. B. Cohen, *op. cit.*, p. 133.

[68] *Princ.*, p. 546.

duration or space, but he endures and is present. He endures forever, and is everywhere present; and, by existing always and everywhere, he constitutes duration and space.[69]

Whether orthodoxy can really be preserved by substituting "constitutes" for "is," one may wonder; but at any rate Newton the theologian is not repeating unamended the heresies—if heresies they be—of More and Raphson.[70]

Similar passages can be found in the *Opticks*. These are sometimes qualified by Newton's cautionary "as it were": for example, in the remarks (mentioned earlier) in Query 28, dating from 1706, about the Almighty's sensorium:

> Does it not appear from phenomena that there is a Being incorporeal, living, intelligent, omnipresent, who in infinite space, as it were in his sensory, sees the things themselves intimately . . .[71]

In other places, no such danger-signal appears: for example, Query 31 (1706):

> A powerful ever-living agent, who being in all places, is more able by his will to move the bodies within his boundless uniform sensorium, and thereby to form and reform the parts of the universe, than our spirit which is in us the image of God [can move] the parts of our own bodies.[72]

In this second case, however, he added a gloss in 1717, to clear up the misunderstandings to which this remark had given rise—as the Leibniz-Clarke correspondence (1715-1716) had meanwhile shown.[73] This ends with the words:

> The organs of sense are not for enabling the soul to perceive the species of things in its sensorium, but only for conveying them thither;

[69] *Princ.*, p. 545.

[70] Yet Koyré can still write of "the correct, Newtonian, that is More's, doctrine" (p. 247) and of Newton and More having "the selfsame concepts" of absolute space and time (p. 160).

[71] Dover edition, p. 370.

[72] Dover edition, p. 403; but this edition incorporates the final wording of 1717, which differs from the 1706 version, as Alexander explains in *L-C.C.*, p. 181. Koyré uses the 1717 wording (p. 219) without comment.

[73] This is indeed one of the main topics of the correspondence. See, for instance, Leibniz's Paper 1, par. 3; Paper 2, pars. 3-4; Paper 3, pars. 10-12; Paper 4, pars 24 ff.; Paper 5, pars. 78 ff.

and God has no need of such organs, being everywhere present to the things themselves.[74]

(iv) Finally, there is the testimony of Newton's associates, notably the memorandum by David Gregory dated 21st December 1705 of a conversation in which Newton had told him about the new Queries he intended to add to the Latin edition of the *Opticks*. This has recently been reprinted in full by I. B. Cohen,[75] and we need notice only one sentence early in the note:

> His doubt was whether he should put the last Quaere thus. *What the space that is empty of body is filled with.* The plain truth is, that he believes God to be omnipresent in the literal sense . . . for he supposes that God is present in space where there is no body, he is present in space where a body is also present.[76]

This adds little to the evidence of the printed Queries, apart from removing some of the hesitancy implied by the interrogative form. But it does confirm what the 1717 gloss to Query 31 later re-emphasised, that (apart from Design) the crucial theological issue for Newton was that of Omnipresence. "He is not eternity or infinity . . . but endures forever and is everywhere present." As Greogry records Newton saying, God is not identical with space, but is present in it, whether it is occupied by matter or no. In all this, the question in the foreground is not the nature of Space, but rather the mode of action of God.

VII

We began with a series of questions about the proper method of inquiry in the history of scientific ideas: in particular, questions about the relative scope of a "critical" and a more "aesthetic" approach. My thesis was that a proper understanding of earlier theories and ideas is necessarily critical, so that one neither can nor ought to try to avoid assessing their scientific success or failure. Of course one must be alive to the extra-scientific con-

[74] Dover edition, p. 403; *L-C.C.*, p. 181. Koyré again cites the 1717 version without comment, though to do so can in this case be misleading, since Leibniz never saw the gloss, which was published after his death.

[75] *Op. cit.*, p. 193.

[76] Footnote to *loc. cit.*

nections of such ideas, and must uncover their historical origins—ethical, theological, metaphysical, or whatever—these being often enough unexpected. But if we fail, before anything else, to consider the scientific merits of the ideas in question, we shall be in danger of exaggerating the extent to which they retained traces of their origins, and our resulting picture of the development of scientific theory will be quite needlessly bizarre. A scientific theory may come into the world trailing clouds of theology or of pure mathematics or even of political theory. But its mission is an explanatory one, and it deserves to be studied and criticized with an eye to its explanatory function above all.

This thesis I have illustrated by reconsidering Newton's notion of absolute space. Historians and philosophers alike have long since ceased to inquire whether this conception might not have a scientific function, and have been content to attack it, apologize for it, or carry out its historical post-mortem. Yet the question of the "scientific function" of an idea should never (I argue) be abandoned so lightly. Newton's chief and permanent contribution to science consisted in the intellectual tools which he fashioned, and our first question must always be about the nature of these tools, as shown in the use to which they can be put and were put by Newton himself—and this question comes properly even before the question of what Newton himself *says* about his own ideas. If it proves that a past scientist misdescribed his working concepts, or described them very eccentrically, then we may start to ask further, historical questions about his personal, extra-scientific convictions; but up to that point, historical influences and theological interpretations are not yet relevant.

This is not a matter of charity, but a maxim of method. The aim is not to "do the best we can for the old chap" and make him look "quite modern really," but to keep the different strands in his thought from becoming entangled in our minds. (This we are justified in doing, even if he *wanted* them to become entangled.) For there is a basic difference in the approach we should adopt, as historians, towards successful and unsuccessful theories. Where our critical inquiries show beyond doubt that a doctrine is to some extent vacuous, succeeding in fact in being less explanatory than its author originally intended, there the question of extra-

scientific influences arises acutely. In Newton's dynamics, for example, the idea of space has just such a complexity: absolute acceleration and rotation can be given a dynamical interpretation, absolute rest and velocity are at best arbitrary. In such a case, we are entitled at once to inquire what led (or misled) the author into accepting that part of his idea which turns out to have been scientifically vacuous, and how he came to overlook the fact that it failed in its explanatory mission.[77] But only where a notion has previously been shown to be vacuous, in this sense, is the question "What led (or misled) him . . .?" a proper one. A fruitful notion, by contrast, is justified by its fruits, and stands in no need of extenuation.

Whatever its ancestry, then, a notion which a scientist puts to a fruitful explanatory use becomes thereby a scientific notion. Like an actress marrying royalty, it acquires a new status. This does not mean that its origins will be historically the less interesting or significant. We can always ask what suggested to its creator that he should try a notion of this form rather than that, and answering questions of this sort is one important task for an historian of scientific ideas. But the question "What *suggested* this idea to him?" is essentially different from the question "What *possessed* him to accept it?"; and this marks off the successful notion from the one which is not—scientifically speaking—a success. For the failed notion, like the actress who fails to capture her duke, never changes its status: it remains a theological

[77] This is no doubt a question-begging phrase, and a full elucidation of it would require a whole treatise on the philosophy of science. Fortunately, for our present purpose, Newton gives an admirable explanation of his aims in "mathematical and experimental philosophy" (cf. note 51 above), and this can be contrasted with that "natural philosophy" which for him overlaps natural theology. Certainly I do *not* wish to suggest that all sorts of scientific theories have a single "explanatory mission" in common; though philosophers with a logician's turn of mind have often been tempted to talk as though this were so, and to attempt a formal treatment of the (singular) function of all theories. Much of the philosophically important work the historian of science can do is, indeed, concerned with exploring the variety of ways in which different classical theories (and would-be theories) in science have set about their respective missions. But I do wish to contrast the manifold explanatory missions of theories with their incidental nonscientific functions: this distinction is explored further in my essay on "Contemporary Scientific Mythology" in the volume *Metaphysical Beliefs*, ed. by A. MacIntyre, London, 1957.

intrusion, a political or ideological irrelevancy, a metaphysical accretion. The historian of ideas can only account for and excuse its appearance in the scientific treatises of the period; whereas its successful cousin, by its very explanatory power, justifies its own place.

This question of status is in another form the question from which we began, for, by acknowledging its priority, the historian of ideas is committed to critical as well as purely genetic inquiries. It is no longer enough for him to point out the metaphysical or theological origins of a notion, and to conclude that the notion itself must also be metaphysical or theological; nor to build up a coherent picture of a former scientist's views, applauding him for the tidiness and consistency of his system.[78] Having reconstructed the antique vase from its discovered fragments (so to speak) he must now go on to ask, "Did it ever hold water?"—what, in other words, was achieved scientifically when this novel theory was introduced? It has been too easily assumed that a theory whose origins were demonstrably metaphysical (say) must itself have remained metaphysical, or that those origins must somehow have persisted at bottom in the form of "metaphysical foundations." Yet what sort of "foundations" are they whose presence leaves the solidity and stability of a theory so little affected as Henry More's theological Space-Deity does the Newtonian theory of dynamics? Surely the case calls for an entirely different architectural metaphor; since More's theory, as elaborated by Raphson, resembles rather the sort of stucco excrescence which was added to a baroque palace, not for any structural reasons, but from motives of fashion or taste. It is indeed the decorative theological superstructure of the Newtonian theory, not its essential metaphysical foundations.

To conclude: our picture of Newton has become much confused as a result of the tendency to look for metaphysics where it is not, and this has encouraged the wholesale displacement of the old idea of an all-rational Newton by the new one of Newton as Faust. Mach, being notoriously and candidly tough-minded, led

[78] Koyré, for instance, is tempted to mix exposition and criticism in just this way, saying "Kepler is right" (p. 70) or "Henry More is perfectly right" (p. 147), even in cases where he by no means subscribes to the view in question and is only congratulating his authors for being *consistent*.

the way: he was on the lookout for anything in Newton's theory which failed to come up to his exacting empiricist ideals, and so might be labelled (insultingly) "metaphysical." Poincaré was in the thick of the controversies over the luminiferous ether, and so focussed his attention to an unprofitable extent on the question of absolute space's existence. Burtt, Snow, and now Koyré, approaching from the historical angle, have been so excited at discovering in Newton's philosophical and theological predecessors and followers historical affiliations for his speculations about Space, that they have worked their ways to quite extreme conclusions. Yet how can one identify Newton's views on absolute space (as Koyré does) with those of Henry More?[79] If More had done anything substantial to promote Newton's revolution in dynamics and astronomy, one might at any rate have *asked* how far his ideas about space and Newton's were really the same. But since More's ideas were not physical ones at all, one can identify his space with Newton's only by begging important questions in dynamics itself, and implicitly dismissing Newton's claim to be making at this point a central contribution to mathematical and experimental philosophy. If one is going to look for historical influences, as distinguished from scientific justifications, there are in any case more likely ones much nearer at hand. Barrow, for instance, writes about time in a manner quite similar to Newton's, and his relations with Newton (unlike Henry More's) are entirely clear and unproblematical.[80]

Our study of the Newtonian concepts of space and time in fact suggests the outlines of a more balanced picture even of Newton the man. For clearly, either to ascribe to him personally nothing but the pure logical genius of the *Principia*, or (more fashionably) to see in him "not the first of the age of reason but the last of the magicians,"[81] is too extreme. Rather, we can recognize

[79] Cf. the passages cited above, in note 64 and elsewhere; esp. Koyré, pp. 160, 247.

[80] See, for instance, his "Lectiones Geometricae" (1670), in which the very phrase, "Ergo tempus absolute quantum est," appears early in the first lecture. Cf. *The Mathematical Works of Isaac Barrow, D.D.*, edited by W. Whewell, Cambridge 1860, p. 161.

[81] J. M. Keynes, *loc. cit.*: see note 10 (in Part I, *Philosophical Review*, LXVII, 1959, 5).

in him similarities to many of those scientists one knows today: men who, in their twenties and thirties, conceive brilliant ideas in the realm of mathematical physics—though they are always liable, if pressed, to produce philosophically eccentric remarks at points where they are least clear about their own methods of thought—but who later lose much of the impulse to original scientific work and tend to build more and more in the way of extra-scientific superstructure on the scientific ideas of their youth. There would be nothing eccentric or unusual in a personal development of this kind, and the resulting picture has one special merit. It enables one to distinguish the question of Newton's permanent contribution to science—of the character of the intellectual tools which he fashioned for us and put to good use himself—from the question of the origins of his ideas, of the influence they had outside science, and of the theological interpretations he seems increasingly to have put upon them in the course of his later years.

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DISCUSSION

LINGUISTIC RELATIVITY: THE VIEWS OF BENJAMIN LEE WHORF

THE welcome appearance of a collection of Whorf's scattered writings,[1] together with an illuminating memoir and introduction and a fuller bibliography than has hitherto been available, makes it possible to see the work of that remarkable man in something like its astonishing entirety. Few books of equal importance are as interesting: it would take a dull reader to be indifferent to Whorf's views.

Competent experts have praised Whorf's technical contributions to the study of American Indian languages. But these are overshadowed by his remarkable and still controversial pronouncements about the relations between language, culture, and mental process,[2] to which this discussion will be devoted.

The aim of rendering what Whorf called "linguistic relativity" sufficiently precise to be tested and criticized encounters formidable obstacles in his writings: variant formulations of the main points are often inconsistent, there is much exaggeration, and a vaporous mysticism blurs perspectives already sufficiently elusive.

The dominating thought is happily expressed in the quotation from Sapir that Whorf himself used as an epigraph for his best essay:

> Human beings do not live in the objective world alone, nor alone in the world of social activity as ordinarily understood, but are very much at the mercy

[1] *Language, Thought, and Reality: Selected Writings of Benjamin Lee Whorf.* Edited and with an introduction by John B. Carroll. Foreword by Stuart Chase. (New York, John Wiley & Sons, Inc., 1956. Pp. x, 278.) A valuable feature is the inclusion of a number of Whorf's hitherto unpublished manuscripts. Subsequent editions ought to include an index.

[2] See, for instance, *Language in Culture*, ed. H. Hoijer (Chicago, 1954), a report of a conference between linguists, anthropologists, and philosophers on Whorf's views. See also Hoijer's "The Relation of Language to Culture" in *Anthropology Today*, by A. L. Kroeber and others (Chicago, 1953) and L. von Bertalanffy, "An Essay on the Relativity of Categories," *Philosophy of Science*, XX (1955), 243-263 (both favorable) and E. H. Lenneberg, "Cognition in Ethnolinguistics," *Language*, XXIX (1953), 463-471, and L. S. Feuer, "Sociological Aspects of the Relations Between Language and Philosophy," *Philosophy of Science*, XX (1953), 85-100 (both highly critical). *Language in Culture* contains further lists of secondary sources.

of the particular language which has become the medium of expression for their society. It is quite an illusion to imagine that one adjusts to reality essentially without the use of language and that language is merely an incidental means of solving specific problems of communication and reflection. The fact of the matter is that the "real world" is to a large extent unconsciously built up on the language habits of the group.[3]

This has been called the "Sapir-Whorf hypothesis."

I believe Whorf is committed to the following ten propositions, each of which needs elucidation:

(1) Languages embody "integrated fashions of speaking" or "*background linguistic systems*," consisting of prescribed modes of expressing thought and experience.

(2) A native speaker has a distinctive "*conceptual system*" for "organizing experience"; and (3) a distinctive "*world-view*" concerning the universe and his relations to it.

(4) The background linguistic system partially determines the associated conceptual system; and (5) partially determines the associated world-view.

(6) Reality consists of a "kaleidoscopic flux of impressions."

(7) The "facts" said to be perceived are a function of the language in which they are expressed; and (8) the "nature of the universe" is a function of the language in which it is stated.

(9) Grammar does not reflect reality, but varies arbitrarily with language.

(10) Logic does not reflect reality, but varies arbitrarily with language.

(1) *Languages incorporate "background linguistic systems."* For uses of the quoted expression, see pages 212, 247, and elsewhere; "integrated fashion of speaking" (p. 158) and "pattern system" (p. 252) are approximate synonyms.

A recurring difficulty is that of distinguishing the "background" from the language itself and so preventing Whorf's main contentions from degenerating into tautology. That a given language imposes an inherited vocabulary and grammar upon its users is too obvious to require mention; but of course Whorf means more than this. The "background" has to be a *sub*system composed of "patterns" that are *meaningful* to the native speaker no less than to the investigating linguist.

To take an illustration: Whorf claims to discover a category of gender in English (pp. 68, 90 ff.) which, unlike gender in Romance languages,

[3] *Selected Writings of Edward Sapir*, ed. D. G. Mandelbaum (Berkeley, 1949), p. 162.

is genuinely functional. Here and throughout Whorf recognizes some linguistic categories, but not all, as genuinely having meaning. For him "any scientific grammar is necessarily a deep analysis into relations" (p. 68) and "linguistics is essentially the quest of MEANING" (p. 73, capitals in original).

In isolating *significant* categories, Whorf proceeds as follows: Formal criteria of somewhat heterodox kinds define the linguistic category; the linguistic analyst (Whorf) then searches for the "idea" that "unifies" the category (p. 81); which is then expressed in the linguist's metalanguage. Ideally, some verifiable predictions about admissible constructions in the language should result. A paradigm of the method is Whorf's isolation of three classes of Hopi verbs (pp. 107-109). Though he begins by using non-semantical criteria, he characteristically presses on until he has satisfied himself about three underlying "concepts." There result what Whorf calls "covert categories" or "cryptotypes" (pp. 88, 89, 92), grammatical classes not marked by invariable morphemic tags, but recognizable by the distinctive interactions of their members with the contexts in which they can occur.

This outcome may remind philosophers of "semantical types" or even of Wittgenstein's "depth grammar." Nor need the most tough-minded of professional linguists feel any qualms about the identification of cryptotypes, since the relevant criteria are *formal*.

The chief difficulty lies in the claim that the cryptotypes *have meaning* for the unsophisticated native speaker. Whorf speaks of "a sort of habitual consciousness" (p. 69); of "a submerged, subtle, and elusive meaning" (p. 70); of a "formless idea" (p. 71), a "rising toward fuller consciousness . . . of linkage bonds" (p. 69), and so on. But it is hard to believe that the ordinary speaker is aware of a grammatical classification that takes all the virtuosity of a Whorf to discover. I doubt that the average English speaker realizes that the particle "*un-*" can only be prefixed to transitive verbs of a "covering, enclosing, and surface attaching meaning" (p. 71) that constitute a prototype. Whorf himself must have the concept since he succeeds in expressing it; but the man in the English street simply uses "*un-*" in happy ignorance. Here I think Whorf commits the *linguist's fallacy* of imputing his own sophisticated attitudes to the speakers he is studying. The heuristic value of the notion of a cryptotype is manifested in its capacity to induce verifiable predictions (cf. the discussion of the imaginary verb *to flimmick* at p. 71); the rest is mythical psychology.

(2) *A native speaker has a distinctive "conceptual system" for "organizing experience."* The underlying picture is of an undivided continuum

arbitrarily dissected by language. Whorf speaks of the "segmentation of nature" (p. 240) and the "artificial chopping up of the continuous spread and flow of existence" (p. 253); he says "we dissect nature" (pp. 213, 214) and "cut" it up (p. 213) when we "organize it into concepts" (p. 213), and all this "largely because, through our mother tongue, we are parties to an agreement to do so, not because nature itself is segmented in that way exactly for all to see" (p. 240).

Let us try this out on color words. We have only a poor handful of uncompounded color words for referring to the millions of observably different components of the color solid; and other languages select the color labels in ways strikingly different—Navaho splits our *black* into two colors and lumps *blue* and *green* together. (But the Navaho are just as good at discriminating colors as we are!)

Here is as favorable a case for Whorf's thesis as can be imagined; yet to apply his ways of talking about the undisputed facts would be to engender confusion. The vocabulary of the operating theatre ("cutting," "chopping," "dissecting," "segmenting") is out of place; to speak is not to butcher, *pace* Bergson and other critics of analysis. To dissect a frog is to destroy it, but talk about the rainbow leaves it unchanged. The case would be different if it could be shown that color vocabularies influence the perception of colors, but where is the evidence for that? If we treat Whorf's talk about "segmentation" as excusable rhetoric, there remains only the complaint that classification is arbitrary.

Is the discreteness of our vocabulary to count as a sporadic or a universal defect? When Whorf talks of everybody seeing the constellation Ursa Major in the same way (p. 164) he seems to admit that language is sometimes adequate to reality; but he inclines to treat the case as exceptional, and the Milky Way serves his metaphysics better than the Big Dipper. He subscribes, consciously or not, to the ancient metaphysical lament that to describe is *necessarily* to falsify. The flat unsatisfying answer is that Whorf, like many others, has succumbed to the muddled notion that the function of speech is to *reinstate* reality. Well, the best recipe for apple pie can't be eaten—but it would be odd to regard that as an inadequacy.

How can language generate a "conceptual system"? If we were to accept the view that reference to somebody's-having-a-concept-of-something is a compendious way of talking about certain related capacities to distinguish objects, to respond to them differentially, and especially to talk about them,[4] we might agree to regard "thinking as

[4] See H. H. Price, *Thinking and Experience* (London, 1953), especially pp. 337-357.

the [a?] function which is largely linguistic" (p. 66). But having-a-concept cannot be straightforwardly identified with ability to use the corresponding word.

We must admit that human beings have far more concepts (distinctive cognitive capacities) than words for expressing them—as the example of colors amply shows. Even if symbolization is essential to thought, a place must be left for *ad hoc* symbols, nonverbal tokens, and other ways of thinking without using dictionary words.

Consequently, inferences from vocabulary to cognitive capacities are always precarious. If the presence of a word actively in use suggests the existence of a corresponding concept, absence of a word shows almost nothing. A striking example is provided by Whorf's observation that the Hopi have no name for the kiva (p. 205). Now it is hardly to be supposed that they have no concept of a " structure so highly typical of pueblo culture and so intimately connected with their religion " (*ibid.*).

Were we able, as we are not, to infer from a given vocabulary to corresponding cognitive capacities, a further inferential leap would be needed to show that different languages incorporate different conceptual systems. The admitted possibility of translation from any language into any other renders the supposed relativity of such systems highly dubious.

Whorf is most interested in what might be called *structural concepts*, typically expressed by grammatical features. He makes much of the fact that the statement "It is a dripping spring" (an odd example, by the way) is expressed in Apache by a very different construction, inadequately rendered by "As water, or springs, whiteness moves downwards" (p. 241). Whorf adds: "How utterly unlike our way of thinking!" But what is the evidence that the Apache *thinks* differently? The difficulty is that the hypostatized structural concepts are so bound to the defining grammatical constructions that it becomes hard to conceive of any extra-linguistic verification. Having the concept of a predicate (for all except the linguist or the philosopher) is about the same as using a language that insists upon the use of predicates, and Whorf's contention reduces to saying that one cannot speak grammatically without using a particular grammar. It is a far cry to the assumption that to speak grammatically is to mold "reality" into a structure isomorphic with the grammar. Here, again, Whorf commits the "linguist's fallacy."

(3) *A native speaker has a distinctive "world-view" concerning the universe and his relations to it.* Or, as we might say, every man is his own

metaphysician. Every language crystallizes "the basic postulates of an unformulated philosophy" (p. 61) and "conceals a METAPHYSICS" (p. 58, capitals in the original).[5]

I understand this to mean that every language incorporates a distinctive set of general categories applicable to the universe and a set of ontological propositions involving those categories. In English,[6] according to Whorf, the relevant categories include "time," "space," "substance," and "matter" (p. 138). We are said to "see existence through a binomial formula that expresses any existent as a spatial form plus a spatial formless continuum related to the form as contents [sic] is related to the outlines of its container. Nonspatial existents are imaginatively spatialized and charged with similar implications of form and continuum" (p. 147). Whorf may be saying that the dominant categories in English are either substance-plus-property or form-plus-matter—the first literally applicable to a physical body of a definite outline, the second to a tangible container with fluid contents. These categories, he suggests, are then applied by "extension" and "metaphor" to cases where they cannot literally fit, so that all our descriptions tend to be "objectified" and "spatialized." (This is no vaguer than Whorf's own account, though occasionally he speaks as if "Newtonian space, time, and matter" (pp. 152, 153) were what he meant by the "form-plus-substance dichotomy" (p. 152).)

Consider now the Hopi "metaphysics": Here, we are told, there is no explicit or implicit reference to time, nor are there "our familiar contrasts of time and space" (p. 58); instead, we have "two grand cosmic forms, which as a first approximation in terminology we may call MANIFESTED and MANIFESTING (or UNMANIFEST) or, again, OBJECTIVE and SUBJECTIVE" (p. 59). The "subjective" realm includes all that is yet to happen, but conceived of as "mental," as something "burgeoning" and "fermenting" in a conative, spiritual activity that embraces natural and animal phenomena as well as human activity (p. 62); the "objective" realm consists of present and past manifestations of this universal spiritual striving (p. 59). The Hopi think of

[5] "Grammar contains in crystallized form the accumulated and accumulating experience, the Weltanschauung of a people" (D. D. Lee, "Conceptual Implications of an Indian Language," *Philosophy of Science*, V (1938), 89). This article takes a Whorfian approach to the language of the Wintu tribe of California.

[6] He says there are no important differences in metaphysics between the various Indo-European languages that he lumps together as "SAE, or 'Standard Average European' " (p. 138).

reality mainly in terms of *events* (p. 147): objectively these are constituted by such directly perceptible features as outlines, colors, movements (p. 147), subjectively as "the expression of invisible intensity factors, on which depend their stability and persistence, or their fugitiveness and proclivities" (p. 147). How much of all this would the average Hopi recognize? Perhaps it might leave him as dumbfounded as a Greek peasant reading Aristotle.

So much for the supposed contrast between the metaphysics implicit in the Hopi language and the metaphysics of "standard average Europeans." Now for some comments.

The idea that a given language commits its users to a distinctive philosophy has been memorably expressed by Lichtenberg: "Our false philosophy is incorporated in our whole language; we cannot reason without, so to speak, reasoning wrongly. We overlook the fact that speaking, no matter of what, is itself a philosophy." One cannot help feeling that an idea that has appealed to thinkers as diverse as von Humboldt,[7] Cassirer, and Wittgenstein must have something to be said for it.

An extreme form of the view rejected by Whorf might hold language to be no more than an external representation of an independent content, so that the relation between the two would be like that of a garment to the body it clothes. But this is plainly indefensible: speech is often an integral part of a wider activity, as the much-discussed case of "performatory language" sufficiently demonstrates. So far we must certainly agree with Whorf and Sapir. But the denial that language is a separable garment for an independently existing reality merely announces a program and offers no arguable thesis. Whorf goes much further in making specific contentions about the "implicit metaphysics" underlying English and other European languages.

Consider a single inference from grammar to underlying metaphysics. Starting from the alleged fact that "our normal sentence" contains a subject before the verb (p. 242), Whorf goes on to say, "we therefore read action into every sentence, even into 'I hold it' " (p. 243). And again "We think of it [i.e., *holding*] and even see it as an action because language formulates it in the same way as it formulates more numerous expressions, like 'I strike it,' which deal with movements and changes" (p. 243).

But what is it to "read" action into a sentence? Can it be anything

[7] Cf. Harold Basilius, "Neo-Humboldtian Ethnolinguistics," *Word*, VIII (1952), 95-105. This useful article contains several references to similar standpoints.

more than *using* the transitive verb? One formal mark of an "action" in the narrow sense is the possibility of adding distinctive modifiers: a man may strike (to use Whorf's example) slowly, jerkily, energetically, and so on. Now if somebody were to attach these adverbs to the verb "to hold" that would be sufficient indication that he was "reading action" into the verb. I suppose a child might say he was holding his hat slowly, and the poet is allowed a similar license; but otherwise the conceptual confusion is too gross to occur.

Still more dubious are Whorf's broader delineations of the unformulated metaphysics. He says that we "objectify" our "awareness of time and cyclicity" and explains: "I call it [our conception of time] OBJECTIFIED, or imaginary, because it is patterned on the OUTER world. It is this that reflects our linguistic usage" (pp. 139-140). And again, "concepts of time lose contact with the subjective experience of 'becoming later' and are objectified as counted QUANTITIES, especially as lengths, made up of units as a length can be visibly marked off into inches. A 'length of time' is envisioned as a row of similar units, like a row of bottles" (p. 140).

But what is it to "objectify"? Is it more than the fact that we use words like "long" and "short" in connection with time intervals? Objectification is supposed to be shown by our interest in exact records, in calculation, and in history (p. 153). But if so, "objectification" seems to shift its meaning. I doubt if we can even imagine what it would be like to "treat time as if it were space": I doubt whether this phrase has any definite meaning for Whorf or his readers.

Whorf concedes that there is no observable difference in the behavior of speakers of languages having markedly different grammars: "The Hopi language is capable of accounting for and describing correctly, in a pragmatic or operational sense, all observable phenomena of the universe" (p. 58). I suppose therefore that the Hopi can estimate time intervals and supply dates, so that even if Whorf is right in his remarkable statement that their language "contains no reference to 'time,' either explicit or implicit" (p. 58), they may be expected to have pretty much the same concept of time that we have. Of course, much depends on what one means by "implicit": if the Hopi manage to get along without any reference to time, one would like to know their secret.

The fact is that the metaphysics that Whorf envisages is not the "unformulated and naive world-view" of the layman, but the sophisticated construction of a metaphysician. Shorn of its fanciful appendages, the philosophy that Whorf professes to discern in "standard average

European" looks uncommonly like a bowdlerized version of some scholia from Newton's *Principia*. To the contention that this is *the* metaphysics embodied in the Western languages (only awaiting formulation by the analyst) the sufficient answer is that Descartes—another "standard average European"—was led to a metaphysical system radically different. Languages that Hume and Hegel could use with equal fluency can hardly embody a unique philosophy.

(4) *The background linguistic system partially determines the associated conceptual system; and* (5) *partially determines the associated world-view.* I have chosen to say "partially determines" in both cases, though it is hard to decide what Whorf's final opinion was about the relation. A much cited passage denies "that there is anything so definite as 'a correlation' between culture and language" (p. 139) and Whorf says emphatically that "there are connections but not correlations or diagnostic correspondences between cultural norms and linguistic patterns" (p. 159). But in these passages Whorf is discussing inferences from linguistic features to specific cultural features such as hunting practices (p. 139) or "the existence of Crier Chiefs" (p. 159). In saying, "The idea of 'correlation' between language and culture, in the generally accepted sense of correlation, is certainly a mistaken one" (p. 139, n. 1), he is referring to culture as a constellation of observable practices and institutions. But in talking about the connection with "habitual thought" he consistently implies a tighter bond: language "imposes" contrasts on us (p. 55), our dominant categories are "creatures" of language (p. 162), our thoughts are "controlled" (p. 252) by "inexorable systems" (p. 257)—and similarly in many other places.

I have already argued that Whorf identified the "conceptual system" and the "world view" with the language in which they were expressed, while also confusedly thinking of them as distinct. No wonder then that he is led to think of the connection as "inexorable": if "thought" is defined as an aspect of "language" the connection between the two becomes one of logical necessity.

(6) *Reality consists of a kaleidoscopic flux of impressions.* This "flux" (p. 213) is uncommonly like James's "stream of thought." Whorf is under the spell of a conception of "raw experience" (p. 102) that is "more basic than language" (p. 149), where all is motion and impermanence and even the contrast between past and present has yet to arise: "If we inspect consciousness we find no past, present, future, but a unity embracing consciousness. EVERYTHING is in consciousness, and everything in consciousness Is, and is together" (pp. 143-144). And the "real time" of consciousness is a *becoming*: "Where real time comes

in is that all this in consciousness [the global unity of experience] is 'getting later,' changing certain relations in an irreversible manner" (p. 144).

Well, it is futile to argue against this picture: insistence upon the continuity and flow of experience is unexceptionable but empty, since nothing imaginable is being denied; but it is a bold leap to the contention that customary reference to time-intervals and temporal relations involves falsification. When Whorf claims that "if 'ten days' be regarded as a group it must be as an 'imaginary,' mentally constructed group" (p. 139), he must be taking the logic of counting to require the simultaneous existence of the things counted. Perhaps the best to be said for Whorf's metaphysics is that in all its amateurish crudity it is no worse than some philosophical systems that have had a considerable vogue.

Yet Whorf manages after all to express his philosophy. In describing the "deeper process of consciousness" upon which language is "a superficial embroidery" (p. 239) he refutes his own claim that "no individual is free to describe nature with absolute impartiality" (p. 239). Here is the familiar paradox that all general theories of the relativity of truth must brand themselves as biassed and erroneous. The standard defense of claiming a privileged position for the theory's own promulgator takes the quaint form in Whorf of a hope that the linguist "familiar with very many widely different linguistic systems" (p. 214) may be free from the metaphysical biases of any. But if Whorf's linguistic studies led him to a Bergsonism that he might have read in the French, it is conceivable that a Greek-reading Hopi might have been led to the delighted discovery of Aristotelian substance as the prime reality.

Whorf's own metaphysics supplies him with a supposed "canon of reference for all observers, irrespective of their languages or scientific jargon" (p. 163), that allows him to appraise languages in terms of their relative ontological adequacy. So he is led, surprisingly, to praise a language that "cannot say 'a wave' " as being "closer to reality in this respect" (p. 262), or to suggest that the Hopi language is a better vehicle for physics than the European languages. But if he were to abstain from metaphysics altogether, on the ground of the incurable relativity of all conceptual systems, his own included, his position would hardly suffer. For the desired relativity might still be argued on the basis of intralinguistic comparisons, just as we establish the relativity of geometries without reference to a supposed absolute and nongeometrical knowledge of space. Such intralinguistic comparisons

will in any case be needed, since the detour into dubious ontology cannot excuse the theorist from the detailed demonstration of variation of grammatical structure. Abandoning the metaphysical substructure would have the additional advantage of permitting argument between thinkers who will need a good deal of persuasion before they become Bergsonians.

This examination threatens to become tedious and need not be prolonged, since enough has been said to reveal the basic difficulties of Whorf's position. I have been particularly interested throughout in the extent to which Whorf's outlook was controlled by philosophical conceptions. It would have been presumptuous to rush in where so many linguists fear to tread, were not so much philosophy entwined with the linguistics. I do not wish the negative conclusions reached to leave an impression that Whorf's writings are of little value. Often enough in the history of thought the unsoundest views have proved the most suggestive. Whorf's mistakes are more interesting than the carefully hedged commonplaces of more cautious writers.

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NONDESIGNATING SINGULAR TERMS

1. Exception has frequently been taken to the treatment of singular terms or individual constants in modern logic.[1] Consider indeed the standard introduction rule for "∃":

∃I: $A' \vdash (\exists W)A$, where A' is like A except for containing free occurrences of an individual constant or variable W' at all the places where A contains free occurrences of the individual variable W. It permits us to infer the existence of something which is such and such from any true premise of the form "*a* is such and such," where "*a*" is an individual constant; to infer, for example, the existence of something which is not identical with anything from the true premise "Pegasus is not identical with anything."[2]

To block such inferences one may, of course, eliminate from one's language all individual constants like "Pegasus" which fail to designate anything. Or, following W. V. Quine, one may replace in one's language all individual constants, whether or not they designate anything, by definite descriptions *à la* Russell; $(\exists W)A$ will then follow from A', where A' is like A except for containing free occurrences of a definite description of the form $(\iota X)B$ at all the places where A contains free occurrences of W, only if E! $(\iota X)B$ is true, an existence premise which may be defined as $(\exists Y)\,((\iota X)B = Y)$.[3] Or, following H. S. Leonard, one may retain in one's language individual constants of either kind, but insert to the left of "⊢" in ∃I an existence premise E!W', which Leonard defines as $(\exists F)\,(F(W') \cdot \diamond \sim F(W'))$, but which we may define more simply as $(\exists Y)\,(W' = Y)$.[4]

It proves awkward, however, to deprive oneself entirely of nondesignating individual constants. As for Quine's proposal, which uses the whole machinery of definite descriptions, and Leonard's original proposal, which drags quantified predicate variables and modal operators into elementary logic, they are rather costly. Our revision of Leonard's proposal, finally, has an unexpected drawback to be pointed out in section 4. We accordingly take the liberty of submitting

[1] See among others H. S. Leonard, "The Logic of Existence," *Philosophical Studies*, VII (1956), 49-64.

[2] W. V. Quine, "Designation and Existence," *Journal of Philosophy*, XXXVI (1939), 701-709.

[3] W. V. Quine, *Methods of Logic* (New York, 1950), § 37; A. N. Whitehead and Bertrand Russell, *Principia Mathematica*, 2nd ed. (Cambridge, 1925), *14.

[4] Whitehead and Russell, *loc. cit.*

here new rules of singular inference. We intend them for languages of a very familiar sort, which we shall call *the languages L.*

2. The vocabulary and grammar of L may be outlined as follows. The primitive signs of L are to be: a list of predicate signs; an infinite list of individual variables and a list of individual constants, referred to here by the capital letters "W," "X," "Y," and "Z"; the two connectives "$\sim$" and "$\supset$"; the quantifier letter "$\exists$"; the identity sign "$=$"; and the two parentheses "(" and ")". The formulas of L, referred to here by the capital letters "A," "B," "C," and "D," are to be all the finite sequences of primitive signs of L. The well-formed formulas of L are to be: $F(W_1, W_2, \ldots, W_n)$, where F is an n-place ($n \geq 1$) predicate sign and W_1, W_2, . . ., and W_n are individual constants or variables; $W = X$, where W and X are individual constants or variables; $\sim A$, where A is a well-formed formula; $(A \supset B)$, where A and B are well-formed formulas; and $(\exists W)A$, where W is an individual variable and A is a well-formed formula. An occurrence of an individual variable W in a well-formed formula A is to be bound in A if it occurs in a well-formed part $(\exists W)B$ of A; an occurrence of an individual variable W in a well-formed formula A is to be free in A if it is not bound in A; and every occurrence of an individual constant W in a well-formed formula A is to be free in A.

The standard rules of inference for L may be cast in the following form:

R (Reflexivity): $A \vdash A$;

E (Expansion): If $A_1, A_2, \ldots, A_n \vdash B$, then $A_1, A_2, \ldots, A_{n+1} \vdash B$;

P (Permutation): If $A_1, A_2, \ldots, A_n \vdash B$, then $A_i, A_2, \ldots, A_{i-1}, A_1, A_{i+1}, \ldots, A_n \vdash B$;

T (Transitivity): If $A_1, A_2, \ldots, A_n \vdash A_{n+1}$ and $A_1, A_2, \ldots, A_{n+1} \vdash B$, then $A_1, A_2, \ldots, A_n \vdash B$;

NE (Negation Elimination): $\sim \sim A \vdash A$;

NI (Negation Introduction): If $A_1, A_2, \ldots, A_{n+1} \vdash B$ and $A_1, A_2, \ldots, A_{n+1} \vdash \sim B$, then $A_1, A_2, \ldots, A_n \vdash \sim A_{n+1}$;

CE (Conditional Elimination) : $A \supset B$, $(A \supset C) \supset A \vdash B$;

CI (Conditional Introduction): If $A_1, A_2, \ldots, A_{n+1} \vdash B$, then $A_1, A_2, \ldots, A_n \vdash A_{n+1} \supset B$;

$\exists$E (Existential Elimination): If $A_1, A_2, \ldots, A_{n+1} \vdash B$ and no occurrence of the individual variable W is free in any A_i from A_1 to A_n or in B, then $A_1, A_2, \ldots, A_n, (\exists W)A_{n+1} \vdash B$;

$\exists$I (Existential Introduction): $A' \vdash (\exists W)A$, where A' is like A except for containing free occurrences of an individual constant or

variable W' at all the places where A contains free occurrences of the individual variable W;

IE (Identity Elimination): $W = W', A \vdash A'$, where W and W' are individual variables and A' is like A except for containing free occurrences of W' at zero or more places where A contains free occurrences of W;

II (Identity Introduction): $\vdash W = W$, where W is an individual variable.[5]

These rules yield, as the reader may check, the following three derived rules of inference (in which $(\forall W)A$ is short for $\sim(\exists W) \sim A$):

L1: If $A_1, A_2, \ldots, A_n \vdash A_{n+1} \supset B$, then $A_1, A_2, \ldots, A_{n+1} \vdash B$;

L2: If $A_1, A_2, \ldots, A_n \vdash B$ and no occurrence of the individual variable W is free in any A_i, then $A_1, A_2, \ldots, A_n \vdash (\forall W)B$;

L3: If $A_1, A_2, \ldots, A_n \vdash (\forall W)B$, then $A_1, A_2, \ldots, A_n \vdash B'$, where B' stands to B as A' stands to A in $\exists$I.

With the aid of L1-L3 the following strengthened versions of IE and II are easily obtained:

IE*: $W = W', A \vdash A'$, where W and W' are individual constants or variables and A' is as in IE;

II*: $\vdash W = W$, where W is an individual constant or variable.

II* follows from II by L2 and L3. As for IE*, one case of it, where W is a variable and W' is a constant, can be proved as follows:

Let X be a new individual variable and let A'' be like A' except for containing occurrences of X at all the places where A' contains free occurrences of W'. Then:

(1) $A, W = X \vdash A''$	IE, P
(2) $A \vdash W = X \supset A''$	(1), CI
(3) $A \vdash (\forall X)(W = X \supset A'')$	(2), L2
(4) $A \vdash W = W' \supset A'$	(3), L3
(5) $A, W = W' \vdash A'$	(4), L1
(6) $W = W', A \vdash A'$	(5), P.

3. We propose as a solution to the problem of singular inference that $\exists$I be weakened to read:

$\exists$I*: $A' \vdash (\exists W)A$, where A' is like A except for containing free occurrences of an individual variable W' at all the places where A contains free occurrences of the individual variable W;

and that IE and II be strengthened to read like the above IE* and II*.

[5] CE was recommended to one of us as a substitute for *Modus ponens* by Professor Stig Kanger.

Our amended rules yield:

$\exists I^{**}$: $(\exists W)\,(W' = W),\ A' \vdash (\exists W)A$, where A' is like A except for containing free occurrences of the individual constant W' at all the places where A contains free occurrences of the individual variable W;

which permits us to infer $(\exists W)A$ from A' whenever W' designates something. The proof of $\exists I^{**}$ runs as follows:

(1) $A,\ W' = W,\ A' \vdash (\exists W)A$	$\exists I^{*}$, E
(2) $W' = W,\ A',\ A \vdash (\exists W)A$	(1), P
(3) $W' = W,\ A' \vdash A$	IE*
(4) $W' = W,\ A' \vdash (\exists W)A$	(2), (3), T
(5) $A',\ W' = W \vdash (\exists W)A$	(4), P
(6) $A',\ (\exists W)\,(W' = W) \vdash (\exists W)A$	(5), $\exists$E
(7) $(\exists W)\,(W' = W),\ A' \vdash (\exists W)A$	(6), P.

Our amended rules do not, however, yield $\exists$I, which permitted us to infer $(\exists W)A$ from A', whether or not W' designates anything. For let L include among its primitive signs an individual constant W_0 such that (1) $W_0 = W_0$ is true, (2) $W_0 = W$ is false for any other individual constant W of L, and (3) the individual designated by W_0 does not fall among the values of the individual variables of L. $\exists$I does not hold under the present interpretation since

$$W_0 = W_0 \vdash (\exists W)\,(W_0 = W)$$

has a true premise and a false conclusion. The remaining rules of inference for L hold, however, under this interpretation.

A word on our primitive rules of inference IE* and II* may be in order. We allow W and W' in IE* to be nondesignating individual constants as well as designating ones. We feel indeed that if $W = W'$ is true and a statement A which exhibits the individual constant W is true, then the result A' of replacing W by the individual constant W' anywhere in A should also be true, whether or not W (and hence W') designates anything. We also allow W in II* to be a nondesignating individual constant as well as a designating one. We feel indeed that a statement of the form $W = X$ is true if and only if X designates whatever W designates. But W designates whatever W designates, whether or not W designates anything. Hence $W = W$ should be true, whether or not W designates anything.

4. As an alternative solution one might consider adopting $\exists I^{**}$ as a primitive rule of inference and retaining IE and II in their original form. The burden of singular inference would then rest exclusively on $\exists I^{**}$. Attractive as the proposal would seem, it has a short-

coming. The resulting rules of inference do not yield IE* and II*, two rules which the reader will sorely miss when he undertakes to prove the standard laws of identity. For let L include among its primitive signs two individual constants W_0 and X_0 and a predicate F such that (1) $W_0 = X_0$ and $F(W_0)$ are true, (2) $X_0 = X_0$ and $F(X_0)$ are false, and (3) the individuals respectively designated by W_0 and X_0 do not fall among the values of the individual variables of L. II* does not hold under the present interpretation since $X_0 = X_0$ is false. IE* does not hold either since

$$W_0 = X_0,\ F(W_0) \vdash F(X_0)$$

has two true premises and a false conclusion. The remaining rules of inference for L hold, however, under this interpretation. $\exists$I**, in particular, holds because $(\exists W)\ (W' = W)$ is false when W' is either W_0 or X_0.

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BOOK REVIEWS

THE SOURCES OF VALUE. By STEPHEN C. PEPPER. Berkeley and Los Angeles, University of California Press, 1958. Pp. xiv, 720. $8.50.

This massive study, the work of nearly two decades, is a theory of value which consists in part of a criticism and development of the conclusions of R. B. Perry and E. C. Tolman and, to a smaller degree, of the ideas of John Dewey and C. I. Lewis. The book is entirely critical of C. L. Stevenson and A. J. Ayer; post-Stevenson thought on the meaning, function, and justification of ethical judgments is ignored. Pepper writes lucidly and well; but in view of the sheer size and complexity of the book, some readers may find it useful to look at a mimeographed research lecture, "The Dynamics of Values," and at a duplicated exchange of fifteen letters between Professor Pepper and Professor Cynthia Schuster. These can presumably be obtained from Professor Pepper.

The content of the book can conveniently be divided into three parts: first, a phenomenology of purposive behavior; second, a survey of what Pepper calls the "selective systems"; and third, the theory of the meaning and justification of value judgments.

The first part of the book, a careful description of the different types of purposive behavior and their aspects, should be warmly welcomed both by psychologists and philosophers. In the reviewer's judgment it is much the most important part of the book. Pepper examines with meticulous and leisurely care many concepts which have been used for the description of purposive behavior, and ends with definitions of various notions which he himself thinks necessary for this. Among those he discusses at length are: drive; quiescence pattern (the conditions necessary for reduction or satisfaction of a given drive); biological need; the impulse pattern (the physiological tensions characteristic of a given drive); the introspectible feelings corresponding to physiological tensions; innate readinesses to act in the presence of a specific impulse-pattern; the anticipatory set (similar readinesses, only learned ones); the mediating judgment; the goal object. Even if the reader is not convinced by the details of Pepper's definitions, he will find the discussions meaty and will be convinced that Pepper has uncovered real difficulties. Having prepared his tools, Pepper goes on to use them in describing the conditioned reflex and

trial-and-error learning, and he proposes a theory of his own about how new drives are acquired. He discusses and criticizes various psychological theories of motivation. Perhaps the most important part of his examination of these is his critical review of Tolman's theory of the native drives. This leads him to his own list of native "appetitive" drives, which he classifies as cyclical, noncyclical (e.g., nurturance, curiosity), and consummatory (e.g., aesthetic delights, which differ in not having impulse patterns demanding quiescence). He rejects Tolman's view that fright and aggression are aversions (and Pepper is helpful in his discussion of the difference between appetitions and aversions); Pepper calls them "injectives" and argues that they are purposive systems with unique impulse patterns, innate readinesses, and quiescence patterns, distinctive because they enter behavior only as subordinate to the course of activity of other drives, when emergency energy is needed.

This phenomenological part of the book is lengthy, but only a preliminary to the main theme, the description of the major "selective systems." Pepper defines a "selective system" as any "dynamic agency" which generates particular acts, dispositions, or objects ("trials"), and then judges them, eliminating some and selecting others. For instance, there is the system of drive reduction: if I am thirsty my drive produces trial-behavior (e.g., approaching an object which looks like a fountain) and also accepts or rejects this behavior (e.g., depending on whether thirst-quenching water is provided by the ostensible fountain). Such selective systems are "natural norms" in the sense that they punish and eliminate forms of behavior, dispositions, and interests, or else encourage and establish them. Pepper is interested in identifying all such "natural norms." The major ones among those he describes are the following: reduction of a single drive (which selects among behavior-trials aimed at satisfying it); pleasure (which selects among modes of consummatory behavior); maximizing drive-reduction and enjoyment in view of one's total set of drives; frustration (which selects among personality traits); tension-reduction in a social group; the culture-pattern with its sanctions; biological selection among culture patterns. These "norms" are here listed in order of increasing force; the latter ones "legislate" over the earlier ones in the sense of being decisive in case of conflict.

Pepper's goal of describing the major selective systems is a large one, which carries him into the territory not only of psychology but of the social sciences and of biology. Specialists in these sciences will doubtless suggest that his descriptions should be simplified in some

ways, supplemented and corrected in other ways. Pepper seems to define a "selective system" in such a way as not to include *all* mechanisms which must be taken into account for an understanding of the dynamics of human behavior, attitudes, social institutions and standards: and it is not clear why it is profitable to limit the concept as he does.

But what have selective systems to do with *values?* Pepper's answer is that we can pass from a correct theory or description of the selective systems or "natural norms" to statements about values. For, he holds, anything is *good* which is selected by the selective systems; anything is bad if it is rejected. An act *ought* to be performed if it is one which the dynamics of the situation "tends to realize"; an act that ought not to be performed is one that will be punished by the selective systems. Of course it is true that, given these ethical premises, information about what acts, and so forth, are selected by the "natural norms" will permit inferences to ethical propositions. But suppose one does not accept these premises. Does Pepper offer any reason why one must?

Pepper's answer is that the premises are guaranteed because they are analytic—when the value-words are being used as *he* proposes to use them. Pepper thinks there is sufficient reason for saying, for example, that "good" does or should mean "approved by the selective systems"; and correspondingly for all the other ethical terms. But why should anyone who is inclined to reject the cited principles adopt Pepper's definitions which make these principles analytic? It is clear that Pepper's definitions hardly do as explications of what an objector *actually means* by his value language, for the very fact that he pertinaciously rejects the ethical principles in question is a conclusive reason for thinking that he does not use these words in such a way as to make the principles analytic. It must be, then, that Pepper thinks there is sufficient reason for him to *change* the meaning of his ethical terms, to *begin* using them according to Pepper's stipulations.

It would be mistaken to assert that there can be no good reasons for changing one's use of ethical terms, although the question in what sense there can be a "good reason" for this is a long story. The only question is whether Pepper provides good reasons for the particular changes he advocates. He points out that if the only ethical questions raised are ones framed in ethical language defined as he suggests, then ethical questions can be answered by empirical methods. But the same can be said for any empiricist definition of ethical terms; and there is the further question whether being answerable by empirical methods is an indispensable property of an "ideal" ethical question—at least, if this

property can be got only by a radical shift in the subject matter of ethical questions. Pepper also thinks that his definitions of ethical terms are as well justified as the technical biological definition of "fish" as compared with the plain man's; and he thinks that there would be as little loss in dropping the ordinary use or meaning of value terms in favor of his proposed usage as there would be in dropping the plain man's concept of a fish. And this would be true, *if* the job of ethical language were identical with that of the technical terminology of psychology and the social sciences—that of expressing concepts useful for a predictive, descriptive, and explanatory science of human and social behavior. But it is highly questionable whether this is the job of ethical language. When we raise ethical questions—about what is worthy of being sought, about what is deserving of approval, about what is properly condemned—our problem seems to be quite different from that of predicting or explaining human behavior and institutions. And for the elucidation of what this problem is, and for a theory about what should count as a justified answer to such questions, it is by no means clear that Pepper's interesting theory about selective systems is of any help.

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INDUCTION AND HYPOTHESIS, A STUDY IN THE LOGIC OF CONFIRMATION. By S. F. BARKER. Ithaca, N.Y., Cornell University Press, 1957. Pp. xvi, 203. $2.75.

Induction and Hypothesis is an attempt to account for the kind of inference by means of which scientific hypotheses may be established on the basis of empirical evidence. Professor Barker characterizes as "non-demonstrative" any inference whose premises support its conclusion without logically necessitating it; he reserves the term "inductive" for inferences from some members of a class to other members of that class (pp. 3 f.). Using this terminology, it is by no means evident that every legitimate non-demonstrative inference is inductive, nor is it evident that induction can provide an adequate account of the inference from observational evidence to scientific hypothesis. Indeed, the first three-fourths of the book aims mainly at showing that induction is unequal to this task. The "method of hypothesis" is introduced in the last quarter of the book as a noninductive form of non-demonstrative inference which the author holds to be more adequate. The method of hypothesis makes essential use of a notion of logical simplicity which is

sufficient to render it noninductive according to Barker. A very large part of the argument consists in the attempt to show the inadequacy of inductive methods, so it is quite appropriate that they should be discussed first and that their consideration should occupy such a large portion of the book.

The book is a model of coherence and clarity of organization. Chapter I points up the importance of the problem and rejects certain attempts, such as conventionalism, skepticism, and appeal to ordinary language, to evade or dissolve it. Chapter II considers the logical nature of evidence and hypotheses; here the evidence and hypotheses are considered as the relata of the relation of confirmation. This is a necessary preliminary to the investigation of the relation itself. Chapters III and IV take up and criticize the two basic inductive methods, elimination and enumeration, respectively. The theories of Keynes, Williams, Reichenbach, and Carnap receive close attention. Chapter V considers the question of hypotheses which imply the existence of unobserved entities, an insuperable difficulty for inductive methods according to Barker. In Chapter VI Barker discusses and rejects reductionism as a means of escaping the need for existential hypotheses. In Chapter VII he examines the thesis that difficulties concerning unobserved entities can be avoided by regarding hypotheses as mere inscriptions, devoid of meaning, which are manipulated by rules in such a way as to allow the derivation of observation statements. This attempt to save induction is also found wanting. The remaining chapters are devoted to the method of hypothesis. In Chapter VIII Popper's theory is considered as a leading example of a noninductive theory. Its shortcomings are pointed out, and Chapter IX sets about remedying the defects. This is done with the aid of a notion of logical simplicity due to Kemeny. The final chapter, Chapter X, contains a summing up. The argument from beginning to end is carried out in an extremely clear and orderly fashion, and the author has succeeded admirably in putting his finger upon many of the most crucial issues and difficult questions.

For purpose of review I shall discuss three issues which are central to Barker's thesis. These by no means exhaust the many important questions raised by the book.

(1) Perhaps the most serious charge Barker brings against inductive theories is that they are unable to deal with the problem of the confirmation of hypotheses containing terms which refer to unobserved entities (pp. 152 f.). Inductivists might attempt to solve this problem by regarding scientific hypotheses as meaningless formal inscriptions

which can, nevertheless, be invested with meaning by partial interpretation. The interpreted system is then subject to confirmation and may very well contain terms which at least seem to refer to unobserved entities.

This approach leads immediately to the problem of a criterion of empirical meaning. Barker suggests that the most outrageous metaphysical systems can be constructed and partially interpreted in such a way as to give them empirical meaning. For this "formalist" approach to be satisfactory it is necessary to have a meaning criterion to rule out such constructions. In view of the well-known defects in earlier formulations of a criterion of empirical meaning, Barker (pp. 136 ff.) considers only Carnap's recent attempt to circumvent them.

Barker constructs a counter-example to show the inadequacy of Carnap's criterion, and, in spite of a trivial technical fault in the example, it appears that he has spotted a genuine difficulty. Since certain terms are only partially interpreted, part of their meaning is not given by the interpretation. The part of the meaning which the interpretation does not specify may be made purely metaphysical and forever exempt from further specification by additional partial interpretations. Barker regards this difficulty as an incurable defect in the whole notion of partial interpretation (pp. 141 f.). If the formalist approach is to be made satisfactory, this defect must be remedied. It is necessary, somehow, to exclude the possibility of a part of the meaning of a term being in principle beyond partial interpretation.

It seems to me that the trouble can be repaired, at least to the extent of excluding counter-examples of the Barker variety. Carnap begins by setting forth a criterion of significance for terms. Then he defines a meaningful sentence as one which is well formed in the language in question and in which every descriptive constant is significant in the sense already defined. Carnap evidently believed that this criterion would eliminate isolated sentences, and so it does if these sentences have no terms in common with non-isolated sentences. It is possible, however, to have isolated sentences containing the same terms as non-isolated ones. Carnap's criterion does not rule out this sort of isolated sentence, and Barker's example is a system which contains just such isolated sentences. Since it is the meaningfulness of theoretical systems which is at issue, it would seem legitimate to add to Carnap's criterion the stipulation that isolated postulates—that is, postulates whose absence from the system would not reduce the observational consequences of the system—be deleted. With this additional stipula-

tion Barker's example would no longer satisfy the criterion, and he would be left with only empirically meaningful statements about absolutes and manifestations thereof—ones which would be of no interest to speculative metaphysics. If this diagnosis of the situation is correct, those whom Barker calls "formalists" would be able, on the basis of a revised criterion of meaning, to reassert their claim to be able to handle existential hypotheses.

(2) In his discussion of Reichenbach's theory of probability and induction (pp. 78 ff.), Barker points out that the treatment of the inference from evidence to hypothesis depends upon the concatenation of inductions by enumeration; his criticism rests upon the assertion that no method of concatenation is indicated. This criticism seems to me to be mistaken. Two problems are involved, the problem of *how* inductions are to be concatenated and the problem of *what* inductions are to be concatenated. First, the whole mathematical calculus of probability provides an exact and formal method of concatenation. Fundamental probabilities can be established by induction by enumeration; other probabilities may then be derived from them by means of the probability calculus. The latter process constitutes concatenation. It does not suffer imprecision or vagueness. Second, the inference from evidence to hypothesis involves the problem of the single case, for a single hypothesis is either true or false and is, in this respect, just like a single event which either happens or does not. In general, the problem of the selection of the appropriate reference class is the crucial one in connection with the single case. This is the problem of determining what probabilities are to be concatenated. Again, a method is given; it is not perfectly precise and unambiguous but it is not bad. The rule is to choose the widest homogeneous reference class available. It may be that these two methods are not sufficient to answer all the difficulties in Reichenbach's treatment of concatenation, but they help considerably and it is a mistake to ignore them.

(3) Finally, we must consider the adequacy of Barker's method of hypothesis. The method is based upon a logical measure function proposed by Kemeny (pp. 85 ff., 176 ff.). This measure function can be applied in two distinct ways, first to measure the complexity of a language and second to measure the degree of strength of a statement (set of statements) within a language. One language is simpler than another if, for every sufficiently large universe, the one has fewer models than the other. One statement (set of statements) within a given language is stronger than another statement (set of statements) in that same language if, for every sufficiently large universe, the one

statement (set of statements) is satisfied by fewer of the models of that language than the other.

Barker's method has two parts. Criterion (i) is a criterion of the relative acceptability of two *systems* of hypotheses: "In comparing any two systems each of which does contain the verified evidence, we shall want to say that the system with the lesser logical measure is to count as the simpler and hence the more acceptable" (p. 181). Criterion (ii) is a criterion of the relative degree of confirmation of *individual* hypotheses: "And if we wish to compare the relative degrees of confirmation of two individual hypotheses with respect to a body of evidence, we may say that one of these hypotheses is better confirmed than is the other if and only if the former hypothesis plus the evidence belongs to some system which is simpler than any system to which the latter hypothesis and the evidence belong" (*ibid.*).

The fact that Barker begins the paragraph in which these two criteria are stated by saying, "If we wish to use this notion of simplicity as a guide for choosing among competing systems of empirical hypotheses, then we shall want to imagine ourselves to possess a definite language adequate for expressing any empirical statement with which we shall be concerned" (p. 180), might lead the reader to suppose that the measure of simplicity involved is the measure of strength of statements (sets of statements) within a fixed language, namely, the language Barker asks us to imagine we possess. In this case we would need to determine the number of models of our language which satisfy the system of hypotheses. However, this is evidently not the method Barker proposes for determining the simplicity of systems of hypotheses. If it were, the consequences would be disastrous—for example, Barker's discussion of Braithwaite (pp. 195 f.) would not be valid.

A system of hypotheses is to be regarded as a linguistic system with its own set of extralogical predicates (p. 168), and its simplicity is to be determined in terms of the number of distinct models it has, quite regardless of the additional extralogical predicates of the language in which the system is formulated and quite regardless of the models of that language. In addition to a logical apparatus and a set of extralogical predicates, the system of hypotheses contains a consistent set of empirical propositions (*ibid.*). The models of the system must, of course, satisfy these propositions. In general, adding a hypothesis which is not entailed by any proposition of the system without changing the system in any other way will increase the simplicity of the system. This means that according to Barker's criterion (i) we can increase the acceptability of a system by adding any gratuitous assumption

which is consistent with the system and which contains no extralogical predicates not already in the system. For example, we might consider our present theories of the solar system to be a system of hypotheses containing a statement s that there is a star of a certain mass and temperature which has a system of planets containing at least one planet inhabited by intelligent beings with a fairly advanced technology. Let g be the statement that there is more than one star within a certain range of mass and temperature (which includes that which we attribute to our own sun) and that every such star has a planetary system including at least one planet inhabited by intelligent beings with a fairly advanced technology. Note that g entails s while s does not entail g, and that s and g contain the same extralogical predicates. The substitution of g for s would amount to the addition of a gratuitous assumption to our system of hypotheses; yet, according to Barker's theory, the resulting system is more acceptable than the original one. Surely any satisfactory theory of the relative acceptability of systems must yield the result that the addition of gratuitous assumptions renders systems less acceptable.

When we come to the application of criterion (ii) of relative degrees of confirmation of individual hypotheses, another serious difficulty arises. Let p and q be two hypotheses containing the same extralogical predicates such that p entails q but not conversely. Let e be the evidence relevant to these two hypotheses. In order for p to be more highly confirmed than q it is necessary and sufficient that $p \cdot e$ belong to some system which is simpler than any system to which $q \cdot e$ belongs. But $q \cdot e$ belongs to every system to which $p \cdot e$ belongs; therefore, p is not more highly confirmed than q. On the other hand, in a large number of important cases, q is not more highly confirmed than p. For q to be more highly confirmed than p on evidence e, it is necessary and sufficient that there be some statement r which is consistent with $q \cdot e$ and which is stronger than any statement which is consistent with $p \cdot e$. It is by no means always the case that such a statement r exists.

According to Barker's theory, then, in many important instances (including Barker's black crow example, pp. 176-179), p and q are either equally confirmed on any evidence which is consistent with both or else they are incomparable with respect to degree of confirmation. This is not a satisfactory result. If p entails q while q does not entail p, then, regardless of other circumstances, we will want to say that q is more highly confirmed than p on any evidence which is consistent with both. This last statement could be regarded as a criterion of adequacy of a theory of confirmation.

It is possible that a more satisfactory criterion of simplicity might be substituted for the present one. If so, the problem of justification would be critical. In his only statement on the subject, Barker says (p. 182), ". . . if a notion of simplicity like this really is to be regarded as fundamental to nondemonstrative reasoning, then it would not be surprising if it were so fundamental as not to admit of being justified in any clear way by appeal to any other principle of probability or induction. This is not necessarily a defect, for one need not expect to justify every principle in terms of some other." It is easy to imagine an inductivist making the same statement only substituting "rule of induction" for "notion of simplicity."

Barker's book does seem to fail to attain its two major aims, to show the inadequacy of other methods and to present a superior alternative. Nevertheless, it is interesting, well written, and important. If every work which failed to accomplish these aims were cast into the flames, we should have nothing left to read on this subject.

WESLEY C. SALMON

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BRITISH PHILOSOPHY IN THE MID-CENTURY. A Cambridge Symposium. Edited by C. A. MACE. New York, The Macmillan Company, 1957. Pp. 396. $5.25.

In the summer of 1953, thirteen important British philosophers gave a series of lectures at Cambridge to an audience of fellow philosophers from many countries. These lectures, in many cases revised and enlarged, are here published. Except for C. D. Broad, who summarizes the lives and major contributions of a dozen Cambridge philosophers from John Venn to Moore, Russell, and Whitehead, each lecturer reviews some specific contemporary problem and presents his solution. Many of the contributors appear to have intended primarily to show the typical ways they each handle philosophical problems rather than offer new solutions, although there are some points made here which are not found elsewhere.

There are two articles on perception. G. E. Moore gives his latest thoughts on a topic which has long tormented him, the relation of sense-data to the surfaces of physical objects. Earlier Moore had said ("Reply to my Critics," in the Schilpp volume on Moore) that he was strongly inclined to hold both of two views which he knew to be incompatible, that sometimes a sense-datum is identical with a part of the surface and also that a sense-datum can never be identical with a

part of the surface. He now finds himself quite sure that the first of these is incorrect, although he still does not know what the relationship is.

A. J. Ayer's essay, "Perception," is an illuminating treatment of this difficult problem, and he incorporates many improvements over his earlier views. He puts Moore's problem as the relationship between terminologies, and begins by showing how innocuous the sense-datum terminology is when properly understood. He devotes the rest of his paper to showing the inadequacies of the standard theories of perception and suggests that the solution to the problem of the relation between statements about sense-data and statements about physical objects lies in seeing that "there is a gap but it does not matter" (p. 224). I am not sure that this lesson did really sink in, for Ayer wavers at the very end when he says, vaguely, "I suggest that statements about physical objects are theoretical with respect to statements about sense-data" (p. 236), a suggestion which looks disastrously like an attempt to assimilate statements about tables and chairs to statements about the unobserved (for instance, the other side of the moon), the unobservable (for instance, electrons), or fictional entities (for instance, frictionless pulleys). And Ayer's own remaks on causal theories of perception imply how misleading such comparisons are.

Three lecturers speak about problems in the philosophy of science. Karl Popper presents and defends his falsifiability criterion for distinguishing scientific from nonscientific theories. R. B. Braithwaite discusses probability and induction, and attempts to solve the problem of induction with his claim that "it is up to the critic to give reasons for abandoning inductive behavior" (p. 149). H. Bondi indicates a few of the philosophical problems which arise for the physicist in the field of cosmology when he attempts to define "the universe" and say something about its properties.

A. C. Ewing reviews the disputes about the relation of the right and the good and about the nature of ethical judgments. On the latter issue, Ewing, for long an advocate of "objective" or "cognitive" theories, admits his debt to John Wisdom, Stephen Toulmin, and R. M. Hare as he comes to suspect that ethical judgments may be "something *sui generis*, not reducible to any other kind but only discussable by analogies with other kinds" (p. 94).

In his article on the mind-body problem, C. A. Mace agrees with those philosophers who reject a two-stuff theory, but the existence of introspectible occurrent events forces him to accept a modified dualism which he represents as that of the material thing and the material

thing as it appears to itself. Mace does not explain how hopes, fears, memories, and the thought that tomorrow is a holiday can all be classified as appearances of a body to itself nor does he explain what sense can be made of his view that something can be an appearance to a *body*.

There are a number of essays on meaning. Gilbert Ryle gleefully discusses the various motives, prejudices, and misconceptions which have tempted philosophers to think of meanings as things, even if rather queer things. Margaret Masterman, in the longest contribution in the volume, examines the nature of metaphysical statements by comparing them with what she calls "ideographic language," of which Chinese is an example; the reader gets some idea of the feel of Chinese, but it is not very clear how it is to apply to typical metaphysical utterances. Theodore Redpath examines the sense in which a poem is said to have meaning and then discusses the relation between the evaluation of a poem and the reasons for that evaluation.

S. Körner and Stuart Hampshire discuss philosophical method. Körner urges the usefulness of "phenomenological description," which is "the attempt to describe what is given with the minimum possible admixture of interpretation" (p. 116), as a device for rendering explicit the meanings of statements; his examples, however, do not inspire confidence. He then turns to philosophical analysis, which he identifies with "the replacement of defective by non-defective notions" (p. 122), and shows how this sort of analysis presupposes somewhat arbitrary standards of success.

In the most interesting paper in the book, Hampshire defends this latter sort of replacement analysis against many of his Oxford colleagues who claim that philosophers should limit themselves to *descriptions* of these concepts in their actual employment. Mere description is not enough, Hampshire maintains, for a set of related expressions may have meaning, may have recognized conditions of use, and still be unsatisfactory and inadequate, for example because of the high proportion of borderline and uncertain cases. If the philosopher judges a terminology inadequate on such grounds, he may properly express this judgment in existential terms, saying, "There is no such thing as free will," "God does not exist," or "No actions are unselfish."

In this bold and forceful attack on the validity of ordinary language as the court of final appeal, Hampshire reopens a crucial question, but his case is incomplete. He himself admits that we can criticize the adequacy of one terminology only by standards drawn from another terminology. Thus I might hold physical-object idioms suspect because they lack the incorrigibility of introspective reports; or I might hold

introspective reports suspect because they lack the public verifiability of physical-object descriptions. But if I did either I would be making the mistake of judging by inappropriate standards, condemning apples because they do not taste the way good pears should. Each sort of discourse does its own sort of job in its own sort of way. And if Hampshire wishes to ask "But couldn't it do it badly?" then he has not finished until he has explained more carefully what "badly" means here.

The justification for the title of this volume rests upon the fact that we have a well-selected group of prominent British philosophers exemplifying their various ways of dealing with problems from a wide variety of fields. As a group, despite their many differences, they all share that lucidity of style which not only increases the pleasure of reading this book but also underscores the predominant passion of contemporary British philosophy, the search for clarity.

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ENGLISH PHILOSOPHY SINCE 1900. By G. J. WARNOCK. London, Oxford University Press, 1958. Pp. ix, 180. 7s.6d.

Mr. Warnock begins by characterizing the temper of the Idealism that prevailed at the beginning of the century, and against this background he sketches the important changes brought about by Moore, Russell, and Wittgenstein. His writing has grace, lucidity, and expertness. It does not attempt to deal with its subject at a deep level and will not advance the understanding of one who has studied the above three philosophers. But to the interested and uninformed it will present a lively and dramatic picture of twentieth-century philosophy in England. Short chapters are devoted to Moore and Russell and a longer one to Wittgenstein. To Moore is rightly attributed a greater influence than is commonly done. The chapter on Russell is regrettably uninformative: a brief description of some leading achievement of his, for example the theory of descriptions, might have been included. Warnock is primarily concerned, I think, to bring out differences and similarities in the way these philosophers and their predecessors conceived of the nature of philosophy. He makes frequent halts in exposition to draw comparisons, many of which are interesting. In later chapters attention is given to logical positivism, Ryle, the relation of formal logic to actual language, metaphysics, common complaints

about contemporary philosophy, and very recent developments under Austin's leadership.

Warnock recognizes Moore's importance but also misunderstands him. Moore, he says, was "a quite new kind of important philosopher. Though he did not deny the legitimacy of metaphysical ambitions, he was entirely without them" (pp. 54-55). But only consider Moore's fifty-year concern with sense data: their existence, their role in perception, their relation to physical objects. The metaphysical thesis that Thomas Reid called "the theory of ideas," which is found in Descartes, Berkeley, Locke, Hume, and Russell, obtains its most sophisticated development in Moore. Warnock suggests that there is metaphysics in Moore's *theory* of philosophy but not in his *practice* (pp. 28-29). This is wrong, for many of Moore's most strenuous labors in practice have been an attempt to settle this metaphysical problem of sense data.

The mistaken notion that Moore demonstrated in practice the possibility of philosophy without metaphysics (pp. 54-55, 61) bears on Warnock's remarks about "contemporary" philosophy. He says that it is "admittedly unmetaphysical" (p. 160) and furthermore that "metaphysical fervour" is difficult to come by nowadays because it is generally understood to depend upon "a kind of illusion" (pp. 144-145). He seems to think of Moore as the creator of a new unmetaphysical philosophy that holds the field today in England. Its current *avant garde* appears to think (contrary to Wittgenstein) that the philosophical work of describing actual uses of language can even be divorced from philosophical perplexity. Its goal is "systematic conceptual knowledge" (pp. 158-159).

If there really is a contemporary development that is admittedly unmetaphysical and not primarily concerned with philosophical problems (in Wittgenstein's sense) then one should see how profoundly different it is from that which moved Moore, Russell, and Wittgenstein. Think of Russell's concern to bring to light "the ultimate constituents of reality" or his attempt to find out exactly *what* is the object of one's belief when one believes something. The *Tractatus* is plainly a metaphysical work (for example, the proof that "substance" exists). The *Investigations* is also a metaphysical work although it is a new kind of metaphysics. Consider, for example, Wittgenstein's intense preoccupation there with the mind-body problem, and the expression of his thought about it in such an aphorism as "The human body is the best picture of the human soul."

Warnock's book is itself some evidence of a general disillusionment

with metaphysics in England (see pp. 144-145). It is not very surprising that this should be, considering how difficult it is to make any worthwhile contribution to the old problems. More surprising is the idea that philosophy can be pursued in separation from the old problems. The notion of "systematic conceptual knowledge" is very hazy. But if, for example, all English verbs were sorted out in some classification or other that had no apparent bearing on any philosophical problem, and if one then compared this undertaking with the philosophical works of Russell, Moore, Wittgenstein, and their predecessors, would one have any inclination to call this undertaking "philosophy" at all; and if so, how would one justify the choice of this word?

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A HUNDRED YEARS OF PHILOSOPHY. By JOHN PASSMORE. London, Gerald Duckworth & Co., Ltd., 1957. Pp. 523. 35s. net.

A hundred years of philosophy, especially when it is the last hundred years, is a lot. In this welcome addition to *The Hundred Years Series*, Mr. Passmore has wisely chosen to limit himself to epistemology, logic, and metaphysics, referring only on occasion to views in ethics, political philosophy, aesthetics, and the philosophy of religion. Even so, what a mass of material he has had to cope with! He tells us in a preface that he has written "from an English point of view" and has "deliberately chosen to be insular." Although figures at Oxford and Cambridge loom large, he has not been parochial. British philosophers find their places among pragmatists, American realists of several varieties, German and French existentialists, members of the Vienna Circle, idealists wherever they have appeared, neo-Thomists, Marxists, phenomenologists, and Polish logicians. Nor has he slighted philosophers whose reputations have waned or who appear to be out of the main stream. There are, for instance, generous sections on A. Seth Pringle-Pattison, Samuel Alexander, and Whitehead. Philosophers of considerably less stature, like C. E. M. Joad, also have a say, albeit a short one. To accommodate the many and various views he has chosen to include, Passmore assumes the role of chronicler abstaining from judgment and criticism. His account is remarkably impersonal. Only some asides and occasional *mots* show us where his sympathies lie.

If he errs in telling the story, it is in the direction of what G. J. Warnock, in his markedly different *English Philosophy since 1900*, calls

"encyclopaedic neutrality." Yet he succeeds, where others have failed, in calling attention to the complexity of philosophical activity; and when the detail threatens to bewilder, he exercises his very considerable talents as an historian pointing out connections, drawing comparisons, and generally putting things in place. The result is a realistic yet readable account of the milieu in which readers of *Mind* and *The Philosophical Review* (perhaps the more cosmopolitan readers) have lived and worked. The extensive bibliography, the well-devised indexes of names and subjects, and the very useful footnotes assure this book a place on the reference shelf. Where else can we find—and so easily!—title, location, and date of articles and books by or about some nine hundred philosophers and on such diverse topics as Moore's notion of analysis, many-valued logic, and the phenomenology of Husserl? We can also find clear and concise statements of a multitude of problems and views. The great labor and good sense which have gone into this excellent history put us very much in Passmore's debt. It can be highly recommended to students in courses in recent and contemporary philosophy.

In the preface Passmore warns us that there will be slips, errors of omission, and plain mistakes. There are, so far as I have been able to tell, very few. On page 147, he slips when he writes, "it was, for example, not true of trans-finite classes that the part is greater than the whole. . . ." On page 318, the tongue-twisting title of Professor Burtt's book is shortened. On page 452, Grice and Strawson are cited as the authors of a paper called "Two Dogmas of Empiricism." There are also places where the narrative could have been improved. In the account of Russell's progressive elimination of entities (pp. 228-238) it would have been well to point out that even as early as *The Problems of Philosophy* "acquaintance with Self" is a probability and not a certainty. On pages 235 and 239, Passmore gives the impression that in "The Relation of Sense-Data to Physics" Russell introduces the term *sensibilia* to refer to entities which are like sense-data but not sensed. It was Russell's intention, rather, to introduce a neutral term standing to "sense-data" as "man" stands to "husband." Then he can raise the question whether there are unsensed sensibilia. In the section on Cook Wilson's realism, Passmore refers to Berkeley's theory of vision and says that this theory "had made it appear that all we are aware of . . .—when we talk of perceiving 'a certain shape' or 'a certain size'—is some kind of tactual or muscular sensation, from which we infer the spatial properties of the physical object" (p. 249). Surely Passmore does not mean to suggest that Berkeley held this silly view;

that he did not is clear from his account of "the immediate objects of sight." In a summary of the *Tractatus*—an heroic task which Passmore undertakes with some trepidation—he attempts to explain how Wittgenstein came to think of a proposition as a picture. "The problem," he says, "was to give an account of the proposition which will allow, first, that we are free to construct false propositions as well as true ones, and secondly, that the point of a proposition lies in its relation to the world" (p. 356). This is not very helpful. We need to know why Wittgenstein was concerned "to give an account of the proposition."

WILLIS DONEY

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TOWARD A PERSPECTIVE REALISM. By E. B. MCGILVARY; edited by A. G. RAMSPERGER. La Salle, Ill., Open Court Publishing Co., 1956. Pp. xi, 378. $4.50.

This book is Professor McGilvary's Carus Lectures, so far as they had been revised by him between 1939, when they were delivered, and the time of his death in 1953. He had not, however, completed the task. His friend, Professor A. G. Ramsperger, with whom McGilvary had often discussed his theories, therefore undertook the editing of the material which had been left in typescript. Six of the chapters—VI to XI—are reprinted from articles McGilvary had published in the journals.

The book as now published is therefore not a carefully planned, systematically organized work, but rather a group of studies, some of them excellent in both form and content and others decidedly open to criticism in both these respects. They have in common, however, the thoroughly relativistic point of view which constitutes their author's "perspectivism." The most that can be done in a short review is to present some of the characteristic theses in those studies and to comment briefly on them.

Perspective realism, McGilvary writes, is "a philosophical theory that regards every experience . . . as the *real objective world* appearing in the perspective of an experiencing organism" (p. 6). This means, for example, that "a lady's gown hanging in a dark closet is not then red; it becomes red again only when it is seen as red, and the red then seen is a different particular from the red seen before" (p. 225).

This example and many others show that McGilvary fails to distinguish between three different "characters" which an expression such

as "is red" may be used to predicate: (a) an *abiding causal capacity* ("disposition") possessed by an object; (b) the *exercise at a particular time* of that capacity by the object; and (c) the *name, Red, of a sense quality*, that is, not of an *object* but of a *state* of consciousness caused by such exercise. The distinction which, instead of this, McGilvary makes among characters is one only between "dynamic" characters—defined by him only vaguely—and "non-dynamic" characters, the latter being the sense qualities: red, bitter, pain, and so forth. As a result of that vagueness, McGilvary makes what seems to this reviewer the fatal error of assuming throughout his book that sense *qualities* (distinguished above from *capacities* and from *exercises* of a capacity) can and do characterize *objects* at the times when the object is exercising its capacity to cause someone to experience a particular sense quality, for instance red. That is, McGilvary treats *states* of consciousness as if they were *objects* of consciousness.

"Substance" he defines as "a college of *dynamic* characters *seated in a consistory*—a place of assembly;" and states that "a 'thing' *at any time* is such a 'substance' together with such non-dynamic characters, if any, as are *at that time* conditioned by dynamic acts then and there taking place" (p. 33).

Consciousness, McGilvary holds, is both a *relation* in which an organism sometimes stands, and a *character* of the organism at those times. The relation, "conscious of," is *sui generis* and unanalyzable. The converse of "A is conscious of B" is "B appears to A." One of the two terms of the consciousness relation is, McGilvary says, *the organism* at the times and only at the times when, as a result of certain physically induced activities in its brain, the organism enters into that relation to something. The "something," as *terminus ad quem* of the relation "conscious of," is an "object" of consciousness; and the organism, as *terminus a quo* of the relation, is then the "subject" of consciousness. The *character*, "being conscious," on the other hand, characterizes the organism when and only when it is in the relation, "conscious of," to an object. At such times, the organism is "a mind."

But McGilvary's use of the term "*the* organism," or "*an* organism," masks the fact, which he therefore does not perceive, that *my* organism never has any other status in my consciousness, nor of course in that of others, than the status of *object* of consciousness; that is, never do I nor does anyone else experience *my* organism in the status of *subject* of consciousness as McGilvary defines this term. Implicit in his account of consciousness is therefore the paradox that no occasion can possibly ever arise for anyone to employ the personal pronoun, "I"; for this

would require that his organism have at the same time the two incompatible relational statuses of subject of, and of object of, his consciousness.

McGilvary terms his conception of the body-mind relation "epidynamicism" in order to distinguish it from epiphenomenalism, which holds that states of consciousness are always effects of, but never causes of, cerebral events—and hence that if states of consciousness could be eliminated without altering at all the cerebral events of which they are effects, the organism would behave exactly as usual.

In what, then, does McGilvary's epidynamicism consist? Simply in the contention that, precisely because states of consciousness are *effects* of cerebral events, they *could not* be eliminated without first altering the cerebral events that would cause them: "if any organism does not become conscious those specific dynamic [cerebral] events assumed to condition consciousness do not occur" (p. 100).

But "*did not* occur" is of course what, in strictness, McGilvary should have written. His writing "do not" instead of "did not" tempts the reader, and perhaps tempted their writer, to construe tacitly but illegitimately the initial "if" in his quoted statement as introducing a *cause*, and hence to construe nonoccurrence of "the specific dynamic effects" as an *effect* of the nonoccurrence of consciousness. At all events, only such illegitimate tacit construing would seem capable of accounting for McGilvary's belief that his epidynamicism differs from epiphenomenalism; for the epiphenomenalist would, quite like McGilvary, maintain that, precisely because states of consciousness are effects of cerebral events, they *could not in fact* be eliminated except by first altering the latter.

Of the six chapters that reprint articles McGilvary had published, three deal with questions concerning relativity, space-time, and the like, and one with relations and universals. Nothing will be said about these here. The two remaining chapters—unlike those commented upon in what precedes—seem to this reviewer significant, sound, and well presented philosophical contributions, concerning which a few words will be appropriate.

In one, "Freedom and Necessity in Human Affairs," McGilvary rightly points out that freedom is incompatible not with determinism but with coercion: "Coercion apart, I am free, not when there is nothing that causes me to will, but when there is nothing that stands in the way of my doing what I will" (p. 262). Choice is genuine when it is determined by awareness of the bearing of each of the alternatives on one's emotional preferences. That these are determined by heredity

and environment does not make them any the less truly one's own: it does not mean that they are emotional preferences imposed upon him against his preference! That a man is morally responsible means that he is such that praise and blame, reward and punishment, threats and promises, determine him respectively to act or to refrain from acting on future occasions as he acted on a given occasion: "responsibility presupposes responsiveness to being held responsible" (p. 273).

In the chapter on "The Warfare of Moral Ideals" McGilvary's central contentions are (a) that among moral ideals there is conflict that can be settled only by victory of one over the other in strife, whenever there is no shared "higher" moral ideal that dictates which of the conflicting ones ought to give way to the other; and (b) that, when there is such a higher ideal, it is "itself one that has come to be accepted after being in dispute," and only as a result of its having defeated its rival (p. 280).

C. J. DUCASSE

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THE PSYCHOLOGY OF PERCEPTION. A Philosophical Examination of Gestalt Theory and Derivative Theories of Perception. By D. W. HAMLYN. New York, The Humanities Press, Inc., 1957. Pp. vii, 120. $2.50.

This book is the first in a new series of monographs written by philosophers and devoted to topics in psychology and the social sciences. The series appears under the editorship of Mr. R. F. Holland. It is fitting that the first volume should deal with perception. Philosophers and psychologists have always paid much attention to this subject; and yet, since they began in recent times to go their separate ways, neither group has taken much account of the work of the other. But neither side is beyond profiting from the other's work. The psychology of perception, for instance, has remained cluttered with a legacy of dubious epistemological theory from the past and, as Mr. Hamlyn says, "there has been a conservatism of approach to the subject and . . . little attempt to consider what questions the psychologist *ought* to ask with regard to perception." One might add that psychologists' language is so encumbered with jargon and with distortions, subtle or gross, of ordinary speech that it is often unclear, and not only to nonpsychologists, what questions they are asking.

To examine some of the questions and answers is what Hamlyn sets out to do. He discusses the main views of the Gestalt psychologists and

of certain later theorists who have either followed or reacted against Gestalt theory in some important way. In the main he confines himself to considering kinds of explanation which are possible in the psychology of perception. He finds that the explanations provided by the theorists under examination are often in some way logically inappropriate. Gestalt theorists, for instance, asked one all-embracing question, "Why do things look as they do?", and provided a single kind of answer. But that answer embodied a conceptual mistake since it treated perception "as the end-product of a process of stimulation"; it was a kind of causal theory and failed to recognize that perception involves skills and abilities. Not only was this kind of explanation logically inapt; the all-embracing question covered many distinguishable inquiries requiring different sorts of answers. The other theories, Michotte's and Gibson's, for example, are criticized in similar ways.

Much of what Hamlyn has to say is of considerable interest. His own views and his criticisms of others seem in general to be correct. The pity is that they are often quite general; indeed they could hardly be otherwise when he has attempted to handle so many topics in so small a space—among them explanation, illusions, the "goodness of form-properties," ambiguous pictures, and the constancy phenomena. If what he says about these topics is in the main correct, it would be good to see much more closely why it is. One wishes that he had tried to cover less ground but with more detail and exactness. In particular, since psychologists are concerned in some way with how we *see* and how things *look*, a careful examination of the uses of these verbs would seem an essential preliminary. But this is something Hamlyn does not attempt. He seems at times to move from one use of these verbs to another almost as loosely as the psychologists he is criticizing. To give an example: he says in discussing the constancy phenomena (p. 65), "It is a fairly common belief . . . that circular objects seen at an angle look elliptical, and that objects seen in a coloured illumination look coloured. *Up to a point* such *beliefs* are reasonable" (my italics). It is clear from his discussion which use of "look" he is employing here, namely, that in which, for example, parallel lines look convergent "according to the laws of perspective." He then continues, without indicating that he is switching to a different use of "look," that, nevertheless, "white objects in shadow *generally* look white" (my italics) and, presumably he would add, circular objects seen at an angle *generally* look circular. He does not draw attention to the switch, however, and it is natural therefore to

read him as saying that circular objects at an angle are *supposed* commonly to look elliptical (that is, noncircular), that they *sometimes* do (the belief is "up to a point reasonable"), but that *generally* they look circular. But this is at best muddled and at worst quite wrong. It is vital to notice the two uses of "look." For while it is true in one use (*not* the one in which things look a certain way according to the laws of perspective, and so forth) that circular objects seen at an angle generally look circular and that white objects seen in shadow generally look white, the "perspective" use (that in which circular objects at an angle look elliptical) is a quite different use. In this use, circular objects at an angle do not just *sometimes* look other than circular; they *never* look circular. For in this use of "look," if an object did ever look circular, it would have to be either not circular or not at an angle. This is not something which is *up to a point* a reasonable belief, nor indeed is it a *belief* at all. Perhaps, too, an investigation of uses of "look" would make clear in which sense or circumstances, if any, Hamlyn's remark (p. 12) that "to talk of lines of equal length *looking* of equal length at all is odd" is true. After all, much that he says about possibilities of explanation hinges on this.

It is significant that by far the least satisfactory section is Chapter 3, in which he tries in ten pages to sketch the historical background from Locke to Gestalt. Here he is reduced to using the language in which traditional theories were couched as if it were clear and unobjectionable. He even seems at times to be expressing agreement with views which are scarcely intelligible at all. He says, for instance (pp. 40-41), that the reaction against nineteenth-century sensationalism took the form of showing that it "flew in the face of experience; our visual field . . . is not like a mosaic of punctiform sensations. James, Bergson, Ward and Stout all *saw* this" (my italics). This surely implies that they were right; but what would it be for our "visual field" to be either like or unlike "a mosaic of punctiform sensations"?

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ARISTOTLE'S THEORY OF CONTRARIETY. By JOHN PETER ANTON. London, Routledge and Kegan Paul; New York, The Humanities Press, 1957. Pp. xi, 253. $5.00.

So much has been written concerning the proper understanding of Aristotle's philosophy that one expects the *raison d'être* of any new book on his philosophy to be the interpretation of difficult passages from

some relatively fresh perspective. Professor Anton's *raison d'être* seems to be threefold. First, he wishes to exhibit Aristotle as a classical John Dewey. In this respect his book merely adds flesh to a contention of Professor J. H. Randall, Jr. Second, his approach to Aristotle's philosophy via contrariety promises a somewhat fresh perspective. Third, Anton has picked up a suggestion of H. H. Joachim (in *The Nichomachean Ethics, A Commentary*, Oxford, 1951) to the effect that the moral "mean" of the *Ethics* is properly understood by comparison with the sensational "mean" of the *De anima*. I shall comment on each of these.

Randall once wrote: ". . . why should Dewey view Aristotle through the eyes of the Neothomists? Why should he not see Aristotle for what he is, the greatest functionalist in the philosophical tradition?—he who of all thinkers can best claim to be the representative of Aristotelian thought" (Anton, p. 206). Interestingly enough, Anton does not refer to Dewey after the first few pages, though his seeing Aristotle through Dewey's eyes is abundantly evident. I cite only two obvious examples. In discussing what Anton calls Aristotle's "principle of the inter-relatedness of inquiries," he writes, "The nature of man as living and thinking organism connects the subject matter of psychology to a theory of knowledge and perception, logic, method, and intelligent conduct, that is moral and political conduct. And this in fact is what the social sciences, in their increasing variety, are doing today" (p. 105). The most startling example is Anton's characterization of "active *nous*" as "comparable to science institutionalized, to man's totality of warranted beliefs and clarified ideals that have endured the vicissitudes of history" (p. 168). These (and there are many other examples) suggest the dominating vocabulary. Naturally enough, given his unstated purpose of documenting Randall's claim, Anton is an admirer of Aristotle. The text is sprinkled with more or less gratuitous encomia, for example, "the soundest metaphysical position of antiquity" (p. 32). There is not space here to attempt serious criticism of Anton's documentation of Randall's claim. I can only say that I believe there is *some* point to the claim and to Anton's documentation, but the latter's addiction to Deweyan jargon makes sober assessment well nigh impossible.

The theme—contrariety in Aristotle's philosophy—is, of course, an important one and worthy of book-length treatment. By reference to virtually every work in the Aristotelian corpus, Anton manages to convey that Aristotle's explanation of "change" in terms of contraries is pervasive. The stated purpose of the book is "to demonstrate the

validity of the position that contrariety, as the basis on which distinctions are made and as having a physical counterpart, provides a 'criterion' for the intelligibility of process" (p. 9). Such a "criterion" is said to be a "distinguishing mark," the "presence of which is a necessary condition for the full cognizance of process" (p. 9). The "demonstration" presented is rather puzzling, for Anton starts with a set of definitions (his term) which rather obviously establish his thesis *ex vi terminorum*. "Process is taken here in the sense in which it is *always* connected with individual substances that are subject to change" (p. 10). "The unfolding of a process is a passage from one contrary *terminus* to an intermediate point or another contrary" (p. 12). Contrariety is then defined as a "precondition of intelligibility", that is, as "a way of referring to, and describing in discourse, contrary *termini* of processes and contrary distinctions" (p. 13). Anton's obvious acquiescence in these definitions has the further consequence of making him appear an uncritical partisan of Aristotle in the latter's critique of his predecessors' explanations of "change." This partially explains why much of the book appears to be only paraphrase of Aristotle's own statements in Aristotle's own terms.

There are, however, some interesting and illuminating discussions. The most effective of these is the documenting of Joachim's suggestion. "With the common sensibles we do not sense contraries, but the grounds for correlatives" (p. 161). This contention is illuminatingly linked with Aristotle's moral doctrine of the "mean." In the case of the "moral *mesotis*" (compared with the "common sense *mesotis*") "the material is not the operations of the special senses but actions and passions. The total range of every passion or emotion . . . could be said to fall within extremes that mark the boundaries of the moral capacity of human nature" (p. 188). The "moral *mesotis*" in *action* Anton sees as determining "the mean between contrary possible directions" (p. 191) which action can take. The detailing of this case (despite obscurities in terminology and style) seems to be both plausible and fresh.

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BENEDICT DE SPINOZA: THE ELEMENTS OF HIS PHILOSOPHY. By H. F. HALLETT. London, The Athlone Press; Essential Books, Inc., Fair Lawn, N. J., 1957. Pp. xvi, 171. $4.00.

To paraphrase Spinoza, I do not know whether this is the best (i.e., the easiest) exposition of his philosophy, but I do think it the

truest and the most adequate. Those who are looking for a sympathetic understanding of Spinoza will find here their most reliable guide. Hallett's position is that philosophers have lost sight of the truth which Spinoza expounded, and there is little to be said for reading him through any glasses other than those he ground himself. The two lenses through which Hallett tries to correct our perception are the conceptions of eternal creative activity—Hallett favors the phrase "potency-in-act"—and the conception of modes as microcosms of macrocosmic Nature. There are great merits in Hallett's position, and his account is helpful and illuminating on almost every major topic in Spinoza. But there are also important limitations.

Let me summarize first some of the merits of this book. The conception of activity as self-determining, eternal, and creative is undoubtedly the metaphysical genesis and core of Spinoza's philosophy. Hallett is right in his contention that those who have misunderstood Spinoza have done so through a failure to take this conception and its implications radically enough. (He might have mentioned Moses Hess as one striking exception.) Spinoza makes it clear in *Ethics I* (see Def. viii, and Prop. xvi, xx, xxxiv, xxxv, xxxvi) that God's essence, existence, eternity, power, and action are one and the same. God, Nature, or Substance is not a denotable thing, not an external and passive object to be singled out, and not a comprehensive whole of parts. Rather, it is causal agency itself. Causal action is not, for Spinoza, uniform temporal sequence, but an eternal unity of act with what is enacted, of which seeing, health, and thinking are some traditionally cited instances. Many misunderstandings might have been avoided had Spinoza's use of "causa" been kept in mind. This eternal doing or making expresses itself in an infinite variety of eternal modes. In keeping with his emphasis, Hallett suggests that "facies totius universi" be translated as "the make of the total universe."

Hallett traces this conception through the account of modes, man, and morals. Modes must not be identified as empirical entities, or as passive objects of sense perception. The modes are eternal agencies. The human mind is an idea, and an idea is not "a lifeless picture on a board" but an activity of thinking. If the idea is adequate, then it is the active immediate presenting of its ideatum, itself in turn an active agency. Man is free and can attain blessedness insofar as he is a mode of eternally creative action.

In order to elucidate Spinoza's account of the relations of the eternal modes to one another, as well as their relation to duration, imagination, error, passion, and bondage, Hallett expands the suggestion he made

in his earlier *Aeternitas* that the modes be conceived as microcosms of macrocosmic Nature. There is admittedly little evidence in Spinoza's texts that he had this conception in mind. Hallett's suggestion is, however, justified by the light it throws on a variety of Spinoza's doctrines, and on the "aptness of the body" in particular. Each microcosmic mode is, Hallett proposes, a center of activity reflecting every other from its own point of view. Helpful though this notion is, it is inadequate to deal with the hierarchical ordering of modes which Spinoza develops in *Ethics*, II, xiii. Spinoza holds that some modes are more powerful, more free, adapted to many more things, than others. To give an account of this Hallett should but does not add (as Leibniz does) some distinct and separate conception of adequacy or clarity in the microcosmic mirroring of agencies.

Each microcosmic mode will, on Hallett's hypothesis, project the rest of nature upon two axes, or frames of reference. On the one hand, the world it reflects may be referred to a macrocosmic divine frame of reference, in which case it will have adequate knowledge of itself and nature. On the other hand, it must project the world it reflects upon its own finite axis, and thus it becomes an external observer of an inadequately imagined, durational, and alien nature. The difficult task of the emendation of the intellect and of moral progress is to effect a transition from the modally distorted to the substantial frame of reference. Hallett develops the theme of emendation and the conditions of moral progress in detail, and throws considerable light on a number of Spinoza's obscurities. What is particularly valuable is that, unlike any other book on Spinoza in English, Hallett actually succeeds in fitting the *Emendation of the Intellect* as well as the political and theological doctrines into their proper places in the *Ethics*. The result is so logical and seamless a unity as to carry a conviction of inevitability.

The faults of this book are by no means as important as its merits. Its greatest weakness is one which a Spinozist like Hallett can scarcely avoid. The conception of eternal creative activity is obviously crucial. Yet those who find it difficult or obscure or confused or unintelligible can hope for little help from one who is in fundamental agreement with Spinoza. For although Spinoza writes that "the infinite essence of God and his eternity are known to all" (*Ethics*, II, xlvii, n.), yet (as this reviewer has argued in a recent paper in this journal) there are no other conceptions, explanations, or examples through which God may be expounded. He cannot be imagined and he must be conceived through himself alone. The road which leads to a true and adequate

knowledge of God is, Spinoza says in concluding the *Ethics*, "very difficult" and "seldom found"; and in the *Emendation* he writes that "the things which I have been able to know by this (highest) knowledge so far have been very few."

In the face of this difficulty, Hallett's effort to elucidate eternal activity for those who do not know that they know the eternal and infinite essence of God is of little avail. He speaks of "potency-in-act," but a philosopher who denies unrealized potencies cannot intend any Aristotelian notion of potentiality. What does he mean? Again, Hallett's example of a perceptual power which is actualized in perception conveys nothing that is useful to those who laugh at dormitive properties.

In this way it is Hallett's very Spinozism which leads him to overlook the fact that one use to which Spinoza puts his geometrical method is as a criticism of traditional metaphysics and its verbal elaboration of the conception of divine substance. The adequate knowledge of God which Spinoza seeks to make clear to himself and his readers is to be found not in metaphysics but in ethics. It is for this reason that Spinoza wrote, after all, an *Ethics* and not a *Metaphysics*. It is for this reason, too, that the abstract and formal style of the opening book of the *Ethics* is replaced in the later books by a style more vivid, more concrete, and more pregnant. Hallett, on the other hand, is concerned to expand Spinoza's metaphysics, and his treatment of the ethics is, for all its enlightening detail, correspondingly abstract, formal, disembodied, and curiously unsubstantial. It is perhaps because of this orientation that Hallett omits mention, in his list of studies "which may be of value or interest," of such books as those of Wolfson, Saw, and Hampshire.

The book contains a number of typographical errors, but none of them affects the sense.

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THE PHILOSOPHY OF CLEMENT OF ALEXANDRIA. By E. F. OSBORN. New York, Cambridge University Press, 1957. Pp. xi, 206. $5.50.

It has been the ironic fate of Clement of Alexandria to be overshadowed by a famous disciple, misunderstood as a theologian, and underrated as a philosopher. In the histories of philosophy, he rarely rates more than a bare mention—and not even that in some! Most of

the surveys of early Christian doctrine brush past Clement on their way to Origen; and many of the monographs on Clement fail to do him justice as a philosophical theologian.

The Philosophy of Clement of Alexandria is an important addition to the scant list of really good books on Clement. Dr. Osborn has taken seriously Clement's claim to be a Christian *philosopher* and has studied his religious philosophy in close connection with the reigning views of Greek wisdom in the second century. The result is an excellent survey of the method and themes of a pioneer Christian thinker.

Clement, as Osborn makes plain, was a devout and "orthodox" Christian who was determined to philosophize in the Greek manner, not in defiance but on behalf of his faith. This involved him in a critical tension between the problems which the Greeks had located and defined, and the answers which, as Clement believed, the Christian truth afforded. Instead of choosing between competing "systems" of philosophy, Clement discarded the systematic method and resorted to a Christian version of maieutic instruction—indirect communication, paradox, and symbolism. He was an eclectic, to be sure, but not for lack of an inner core in his thought. Osborn undertakes to show that Clement achieved a real synthesis of the disparate elements in his philosophical theology. "The purpose of this study is to set out this new synthesis and to show how Clement used old ideas to convey something new" (p. 13).

The distinctive thing in this "something new" was the use of the Greek philosophical vocabulary in the service of the Christian message. Orthodox theologians like Ignatius, Justin, and Irenaeus had freely borrowed and adapted Greek terms and notions but Clement was the first Christian to undertake a thoroughgoing religious metaphysics, controlled by the primitive Christian *fidei articuli*. The Gnostics were philosophers and claimed to be Christians, but had denied the crucial "facts" of the Gospel: God Himself actively involved in creation and human history. Clement undertook to salvage the term "Gnostic" from the heretics and to reserve it for that fullest and most perfect stage of Christian development and wisdom. He was equally eager to show that, in the providence of God, the philosophy of the Greeks had been given them as a *paidagogos*—their *preparatio evangelii*, as the Law had been for the Jews.

The two distinctive notions in Clement's "new synthesis" are his doctrines of *creatio de nihilo* and the Incarnation of God's Logos. "Clement is the first person to state and give reasons for the doctrine of creation *ex nihilo*" (p. 33). Yoked with this, Clement's Logos-

doctrine serves to stabilize the paradox that God in His οὐσία is utterly beyond knowledge and definition and yet, in His δύναμις, He stands revealed in Jesus Christ. This dialectical concept of the immanence of the transcendent runs through the whole of Clement's thought. Clement yields to none in the rigor of his *via negativa*. But God is also free and active and has chosen to reveal Himself through acts and agents which make known the Unknown and which illuminate the Mystery of Being without reducing its mystery. Thus, Clement employed the terms of a static ontology to expound dynamistic views of God and the world, good and evil, truth and error, sin and salvation. Osborn expounds all this on the basis of a thorough and competent exegesis and with the tools of modern logical analysis.

The persistent dilemma of ancient philosophy—and especially of that period of religious philosophy from Antiochus to Proclus—was the problem of the One and the Many: the relation of the transcendent God to the immanent manifold of being, goodness, and truth in the world. The gulf between the infinite and the finite was bridged by various patterns of emanation and remotion, but in every case the antithesis remains—an irreconciliable contrast which defies logical analysis. Osborn shows how Clement *begins* with the classical antithesis and forces it to its extremest form, after which he can deny its ultimacy and assert its negation in and through the Biblical revelation: above all, the revelation of God in Jesus Christ. Once a thoughtful man stands in the perspective created by this Christ-Event (and this is what Clement means by *faith*) he is able to think more clearly than before about God's transcendence and His "at-hand-ness"—a paradox, certainly, but no longer a contradiction. The initial posture of faith required of any such standpoint is not obscurantist, since "all demonstration is referred back to indemonstrable faith" (p. 132). Osborn takes great pains to set out the full range of arguments by which Clement seeks to buttress this distinctive concept of faith and reason.

By design and intent, this book focusses rather narrowly upon Clement's philosophy and so neglects some of the other basic issues in Clement's teachings about the Christian life which are closely correlated with his philosophy and his work as a Christian teacher. The treatment of ὁμοίωσις τῷ θεῷ (pp. 92 ff.) is inadequate and, consequently, so is that of the connection between Clement's metaphysics and ethics. Or again, the section on the substance and function of the rule of faith (pp. 118 ff.) is sketchy and inconclusive. Third, the discussion of *Stromateis* VIII is disappointing. Osborn sums up the existing speculation on the origins of these "notes on logic," but not

their probable use in Clement's curriculum of catechetical instruction. But the most signal instance of neglect is his failure to explore the baffling problem of Clement's relationship with Origen.

Too often, even when he does not neglect an important item, Osborn compresses his discussion of it unduly. Frequently his summaries and expositions are so terse as to be nearly useless (save always for his copious and faithful citations). In particular, the sections which compare and contrast Clement's ideas with those of his Greek counterparts are rarely satisfactory.

Nonetheless, within the terms of its own set task, this essay is plainly a welcome contribution to an underrated chapter in the history of religious philosophy. It should become a standard item on every bibliography of early Christian thought.

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NOTE

THIRD EAST-WEST PHILOSOPHERS' CONFERENCE

The University of Hawaii will conduct a Third East-West Philosophers' Conference from June 22 to July 31, 1959 in Honolulu. The theme of the conference is "East-West Philosophy in Practical Perspective." The work of the conference will be divided into six one-week sections as follows:

1. The Relation of Philosophical Theories to Practical Affairs.
2. Natural Science and Technology in Relation to Cultural Institutions and Social Practice.
3. Religion and Spiritual Values.
4. Ethics and Social Practice.
5. Legal, Political, and Economic Philosophy.
6. Conspectus of Practical Implications for World Understanding and Cooperation.

In conjunction with the conference eight special courses will be offered in the Summer Session of the University of Hawaii—two in Western philosophy, three survey courses in Asian philosophy (Buddhist philosophy, Chinese philosophy, Indian philosophy), and three comparative courses (Philosophy of Religion, Legal and Political Philosophy, and Ethics and Social Philosophy).

For further information write Charles A. Moore, Director, East-West Philosophers' Conference, University of Hawaii, Honolulu 14, Hawaii.

IN THE BEGINNING

Some Greek Views on the Origins of Life and the Early State of Man

By W. C. K. GUTHRIE, *Professor of Ancient Philosophy and Master of Downing College, Cambridge*

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